

# Scaling up alcohol prevention in primary health care

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**Scaling up alcohol prevention in primary health care:  
exploring factors influencing alcohol screening in  
Colombia, Mexico and Peru**

Daša Kokole

Scaling up alcohol prevention in primary health care: exploring factors influencing alcohol screening in Colombia, Mexico and Peru

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**Scaling up alcohol prevention in primary health care:  
exploring factors influencing alcohol screening in  
Colombia, Mexico and Peru**

**Dissertation**

to obtain the degree of Doctor at Maastricht University,  
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# **CHAPTER 1**

## **General introduction**

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## **ALCOHOL AS A PUBLIC HEALTH PROBLEM**

Alcohol is a toxic substance (Okaru & Lachenmeier, 2021) that is responsible for 5.0% of all morbidity and 5.3% of all mortality worldwide (Shield et al., 2020). Alcohol consumption has been shown to have a detrimental effect on a range of outcomes, including liver disease (Rehm et al., 2010), different types of cancer (Bagnardi et al., 2015), alcohol use disorders (Grant et al., 2015), non-ischaemic cardiovascular disease (Rehm & Roerecke, 2017), tuberculosis (Imtiaz et al., 2017), and both intentional and unintentional injuries (Rehm et al., 2017). Recent evidence also shows a causal relationship between alcohol use and mental health outcomes, especially depression (Bellos et al., 2016; Boden & Fergusson, 2011), as well as health harm to others, for example through foetal alcohol spectrum disorders (Popova et al., 2016; Testa et al., 2003). Any decrease in the amount of alcohol consumed can be beneficial for health, as there is a monotonic dose-response relationship between alcohol consumption and most of the related negative health outcomes – meaning that the increase in average alcohol consumption is associated with increased disease risk or mortality (Rehm et al., 2021).

Historically, the European region had the highest per capita alcohol consumption (11.3 litres per capita in adults 15+ from EU+ countries in 2016 (World Health Organization Regional Office for Europe, 2019)). While alcohol consumption in high-income countries seems to be stabilising or even decreasing (Manthey et al., 2019; World Health Organization Regional Office for Europe, 2019), middle-income countries (both lower- and upper-middle-income) have seen large increases in alcohol consumption over the last three decades and are the main driver of the 70% increase in the total volume of alcohol consumed between 1990 and 2017, with projected further increases (Manthey et al., 2019). The number of drinkers is projected to rise slower than the volume of alcohol consumed, meaning that the average per capita consumption will increase, as will the associated alcohol-related harms (Manthey et al., 2019).

In Latin America and the Caribbean region, alcohol use was the fourth-highest risk factor for morbidity in 2019, behind the high body-mass index, high fasting plasma glucose, and high blood pressure (Murray et al., 2020). In Colombia, Mexico, and Peru, the three countries that are the subject of this thesis, alcohol use as a risk factor led to respectively 5.1%, 10.5%, and 6.8% of deaths from all causes among males, and 0.6%, 1.9% and 1.7% of deaths from all causes among females (Institute for Health Metrics and Evaluation, n.d.). This marked gender disparity in health outcomes can be attributed to differing drinking patterns between men and women, as the latter are more likely to abstain and less likely to drink heavily (Table 1). This is related to different gender roles and societal expectations, as there are both more social occasions and greater acceptability of men drinking (Pyne et al., 2002). Data from the World Value Survey also indicate a certain level of cultural normalisation of alcohol - especially in Mexico, as seen from public observability, and the presence of stigma concerning heavy drinking – especially in Peru, as evidenced by proportions of respondents who would not want to have heavy drinkers as neighbours.

**Table 1.** Alcohol consumption-related indices in Colombia, Mexico, and Peru (data from Haerpffer et al., 2022; World Health Organization GISAH system, n.d.)

	Colombia	Mexico	Peru
WHO: Total alcohol consumption 15+ (in litres of pure alcohol [95% CI])	5.5 [4.4, 6.6] Males: 8.8 [7.2, 10.9] Females: 2.3 [1.8, 2.8]	5.0 [4.0, 6.3] Males: 8.1 [6.5, 10.3] Females: 2.2 [1.7, 2.7]	6.8 [5.7, 8.0] Males: 10.4 [8.8, 12.3] Females: 3.2 [2.7, 3.9]
WHO: Consuming alcohol over the last 12 months	38.3% of total population; 51.7% of males and 25.6 of females.	42.7% of total population; 56.4% of males and 29.4% of females.	53.2% of the total population; 67.1% of males and 39.6% of females.
WHO: Heavy episodic drinking in last 30 days among drinkers (15+)*	39.9% (51% males, 18.6% females)	42.5% (54.2% males, 20.8% females)	(15+): 49.5% (62.8% males, 27.4% females)
WHO: Prevalence of alcohol use disorders (including alcohol dependence and harmful use of alcohol)	7.0% (10.4% males, 3.8% females)	2.3% (4.3% males, 0.4% females)	8.9% (14.0% males, 3.8% females)
WVS: how often do you see alcohol consumed on your street? (% often or very often)	48.6%	73.5%	48.8%
WVS: which group of people would you not like to have as neighbours (% select heavy drinkers)	39.7%	55.3%	70.0%

\* Consumed at least 60 grams or more of pure alcohol on at least one occasion in the past 30 days

The existing alcohol-attributable morbidity and mortality in the three countries, as described above, along with the projected upward consumption trends in the rapidly developing middle-income countries, including Latin America, necessitate a greater focus on approaches that will help with reducing the alcohol consumption and the associated alcohol-related harm (Manthey et al., 2019; World Health Organization, 2018a).

## REDUCING ALCOHOL-RELATED HARM

Over the last decades, an abundance of evidence accumulated on the most effective interventions to decrease alcohol-related harm. Population-wide interventions such as pricing policies (e.g. increasing excise taxes), restrictions or bans on alcohol marketing, and restrictions on alcohol availability, have been proposed as the “best buys” by the World Health Organization (WHO) (World Health Organization, 2013), as they have shown to be the most cost-effective (Chisholm et al., 2018). In a more recent WHO initiative - SAFER (World Health Organization, 2018b), two other measures have been added for a comprehensive alcohol policy: drink-driving countermeasures (e.g. limiting blood alcohol content) and health professionals providing screening, brief interventions, and treatment. This thesis focuses on the latter as an approach that has the potential to reach a big part of the population via health services and is less dependent on (politically more challenging to introduce) legislation.

Providing the alcohol screening and brief interventions refers to the health professional using a screening instrument to assess the patient’s alcohol consumption (from here

on referred to as “screening”) and providing information and support for reducing alcohol consumption if it’s too high (from here on referred to as “brief intervention”). An internationally recognised and most frequently used brief screening instrument is Alcohol Use Disorders Identification Test (AUDIT) (Babor et al., 2001). Its short version, AUDIT-C, is a three-question screening instrument measuring the frequency and quantity of alcohol consumption, including the frequency of heavy episodic drinking, over the past twelve months (Babor et al., 2001). If the patient is found to have an alcohol consumption score that indicates a hazardous drinking pattern but not necessarily indicating dependence, the health professional provides a brief advice and support on how to cut down.

There is not a single definition and content of a brief intervention; it can be as short as 5-10 minutes of structured advice<sup>1</sup> or consist of multiple motivational interviewing sessions (Kaner et al., 2018). The commonly incorporated elements are feedback on a person’s alcohol use, information on the harms associated with risky alcohol use, benefits and advice on reducing consumption, motivational enhancement, and the development of a personal plan to reduce consumption (Kaner et al., 2018). Motivational interviewing techniques, such as eliciting change talk, or generating commitment, can also be used (Preusse et al., 2020). Brief interventions usually focus only on patients with hazardous (increasing risk of harmful consequences) or harmful consumption (indicating existing damage to physical or mental health) (Heather, 2011). If the patient’s alcohol consumption pattern shows a high risk for the existence of dependence, the health professional can also refer him directly to (psychosocial or pharmaceutical) treatment (OECD, 2015).

Providing alcohol screening and brief interventions in primary care reflects the current public health approach to detect and target potential heavy drinkers early on a large scale, thus preventing the development of future alcohol problems, rather than solely focusing on the treatment of alcohol users with already problematic patterns of drinking (McCambridge, 2021). This, in turn, stems from the understanding of alcohol not only as an addictive substance causing dependence in a minority of its users, but as a psychoactive substance with a wide range of social, psychological, and health-related negative outcomes (Edwards, 2010). This contemporary and more comprehensive view of alcohol use as a multifaceted issue and the consequential focus on alcohol screening and brief interventions as a tool to improve population health is to a large extent a consequence of the public-health-oriented work spearheaded by the World Health Organization over the last five decades and contrasts with the previous perceptions of alcohol problems as a moral or purely medical issue (Edwards, 2010).

Conducting alcohol screening and providing brief interventions in primary care has a strong evidence base as an effective approach that can help individuals with risky drinking patterns to reduce their alcohol consumption and the associated disease and

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1 Hence, the term “brief advice” is also sometimes used, as is the case of Chapter 2 of this thesis.

death burdens (Anderson et al., 2009; Beyer et al., 2019; O'Donnell, Anderson, et al., 2014; O'Donnell, Wallace, et al., 2014), although it is not without debate on whether the results point to the efficacy (in controlled trials) or effectiveness (under the real world conditions) of the approach (Heather, 2014). Most of the studies establishing this evidence come from high-income countries (O'Donnell, Anderson, et al., 2014; O'Donnell, Wallace, et al., 2014), but a smaller body of evidence suggests that the approach is also effective in middle-income countries (Joseph & Basu, 2017; Moretti-Pires & Corradi-Webster, 2011; Ronzani et al., 2009).

## KNOWLEDGE-PRACTICE GAP AND IMPLEMENTATION RESEARCH

The alcohol screening and brief intervention implementation is an example of the knowledge-practice gap: despite well-established evidence in the efficacy/effectiveness studies, it is often not used by practitioners in clinical practice. National-level studies have shown that a minority of general practitioners talk about alcohol with their consulting patients: 19% of Dutch, 26% of Swedish, and 17% of Norwegian respondents reported conversation about alcohol in healthcare in the past 12 months (Abidi et al., 2020; Lid et al., 2021), one-sixth of the US patients ever talked with a health professional about alcohol use (OECD, 2015), and only 6% of Italian risky drinkers were counselled to reduce their alcohol consumption by their doctor (CnEps, n.d.). Modelling studies have shown that the approach can have a significant population-level impact only if a sufficient number of patients is reached (for example, in Germany, if 50% of PHC patients would be screened since 2009, the alcohol consumption would be 12% lower by 2018, but in practice, less than 3% of patients were actually screened) (Manthey et al., 2021). In order to achieve population-level effect then, the intervention has to be introduced on a large scale.

Scaling up is defined by WHO as “*deliberate efforts to increase the impact of successfully tested health innovations so as to benefit more people and to foster policy and programme development on a lasting basis*” (World Health Organization & ExpandNet, 2010). A field of inquiry that can aid scaling up through its structured and phased approach to replicating and evaluating the chosen intervention in different sites is implementation science (Greenhalgh & Papoutsis, 2019). This growing and relatively recent field recognises that different approaches are needed when studying considerations regarding implementation in practice compared to studying effectiveness or efficacy in a controlled setting. In one of the earliest attempts at definition (Peters et al., 2013), implementation science (also referred to as implementation research) is defined as “the scientific inquiry into questions concerning implementation—the act of carrying an intention into effect, which in health research can be policies, programmes, or individual practices (collectively called interventions)”. The main aim of implementation research is to understand how interventions work in the real world as opposed to controlled settings (Peters et al., 2013). The implementation aspects considered can be the factors facilitating or hindering implementation, implementation processes and results, as well as implementation

strategies supporting adoption and successful implementation in practice. Interaction with context is also seen as a crucial concept to be taken into account (Peters et al., 2013). The focus on implementation research is especially important in low and middle-income countries (Theobald et al., 2018), where there are fewer available resources, which can require novel, innovative and locally sourced solutions in translating research results into routine practice (Yapa & Bärnighausen, 2018).

Implementation research is concerned with a different set of outcomes compared to efficacy or effectiveness research. Implementation outcomes such as acceptability, adoption, appropriateness, feasibility, fidelity, implementation cost, penetration, and sustainability (Table 1) are distinguished from outcomes such as efficacy and effectiveness (Proctor et al., 2011). To facilitate the identification and evaluation of factors influencing implementation, several implementation frameworks have been developed, such as Consolidated Framework for Implementation Research (CIFR) (Damschroder et al., 2009), TICD framework (Flottorp et al., 2013), PARIHS (Rycroft-Malone, 2004) or Fleuren’s determinants framework (Fleuren et al., 2004). Common to most of the implementation frameworks is that they identify factors influencing implementation on different levels: intervention level, implementer level, level of organization, level of community, or broader external environment.

**Table 2.** Implementation outcomes definitions (adapted from Proctor et al., 2011)

Implementation outcome	Definition
<i>Acceptability</i>	Perception among implementation stakeholders that a given intervention is agreeable or satisfactory
<i>Adoption</i>	Initial decision or action to try or employ the intervention
<i>Appropriateness</i>	Perceived fit, relevance, or compatibility of the intervention for a given practice setting, provider, or consumer; and/or perceived fit of the intervention to address a particular issue or problem
<i>Implementation cost</i>	Cost impact of an implementation effort
<i>Feasibility</i>	Extent to which a new intervention can be successfully used or carried out within a given agency or setting
<i>Fidelity</i>	The degree to which an intervention was implemented as it was prescribed in the original protocol or as it was intended by the program developers
<i>Penetration</i>	Integration of the intervention within a service setting and its subsystems
<i>Sustainability</i>	Extent to which a newly implemented intervention is maintained or institutionalised within a service setting’s ongoing, stable operations

One of the key components of the implementation research is also the development and evaluation of the implementation strategies, defined as “methods to enhance the adoption, implementation, sustainment, and scale-up of the intervention” (Brownson et al., 2012). The implementation strategies can be discrete, multifaceted, or blended. Discrete strategies involve only single action or process (e.g. training for implementers), and the multifaceted ones combine two or more discrete strategies (e.g. provision of training and consequential online support). Blended implementation strategies are protocolised and consist of multiple discrete strategies, as for example the implementation

strategies described later in this thesis. Despite their importance in bringing about change, implementation strategies are often less than optimally defined and assessed (Proctor et al., 2013).

## **PROCESS EVALUATION IN IMPLEMENTATION RESEARCH**

A concept partially overlapping with implementation research is process evaluation – understanding how the studied intervention was implemented and how its implementation contributed to the outcome (Moore et al., 2014, 2015). In the field of (public) health intervention evaluation, the last three decades have seen a high increase in studies describing process evaluation components (Steckler & Linnan, 2002). Steckler and Linnan (2002) attribute this development to the fact that the interventions have become more “complex” in the sense that the projects are implemented at multiple locations, at multiple levels, and with multiple audiences. The interventions themselves have also become more complex, involving multiple intertwining components (Craig et al., 2008). Additionally, it has become more important to be able to discern the reasons for the outcome of the intervention – to understand why the intervention did or did not work. Finally, process evaluation can help elucidate the relationship between theory and practice and understand which theoretical constructs make a difference when applied in practice. Focus on process evaluation thus increased with increased awareness of the limitations of the efficacy-based research paradigm (only focused on the outcome - does the intervention work or not), and recognition of the importance of discovering which intervention components are effective, for whom the intervention is effective and under what conditions the intervention is effective (Pawson & Tilley, 2004; Steckler & Linnan, 2002).

Process evaluation is not necessarily limited only to implementation research (focused on work within real-world conditions), as it can be used to assess the implementation process also in more tightly controlled efficacy and effectiveness studies. On the other hand, implementation research can be associated with different kinds of evaluation (such as formative or summative (Bauer et al., 2015)), but process evaluation is central, as the evaluation of the implementation process and its interaction with the implementation (and other) outcomes is vital to understand the success (or lack of it) of the implementation of the intervention in the real world (Bauer et al., 2015). While process evaluation has mainly been used to evaluate the implementation of the evidence-based interventions, the implementation strategies (as defined above) can also be evaluated with the same process evaluation methods (Hulscher & Wensing, 2020).

Several frameworks can help structure process evaluation, such as Steckler and Linnan framework or the RE-AIM model (Glasgow et al., 1999; Steckler & Linnan, 2002). The framework used in this thesis comes from the UK Medical Research Council (MRC)'s guidance on process evaluation (Moore et al., 2014, 2015), which builds upon their general guidance on evaluating complex interventions (Craig et al., 2008). While some of the concepts in this framework overlap with the concepts used in the other mentioned

process evaluation frameworks, MRC's framework has been selected as it goes beyond only listing the concepts, but also ties them into the conceptual model emphasising the relations between implementation, mechanisms of impact, and context (see Figure 1) (Moore et al., 2014).

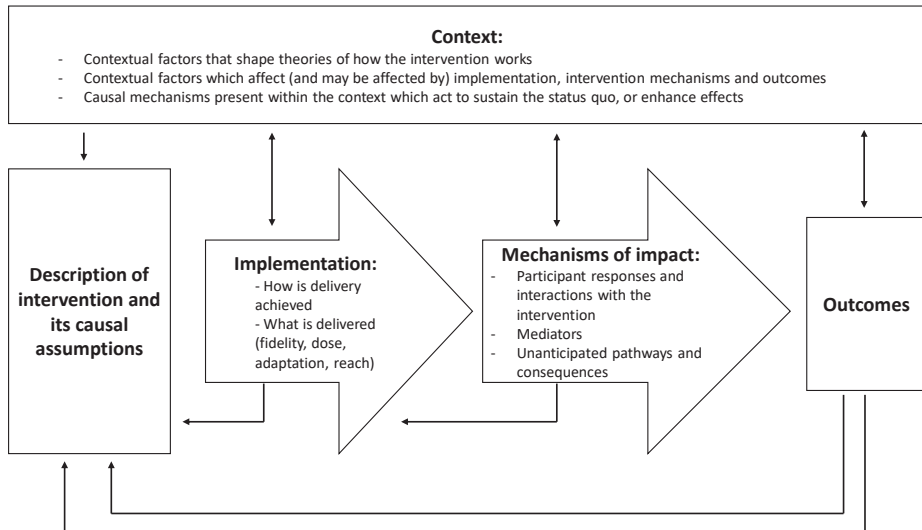
The key topics for process evaluation to unpack that will aid the explanation of the outcomes of any randomised controlled trial or quasi-experimental research according to this framework are the following:

- Implementation: what is delivered (in terms of dose, reach, fidelity, and adaptation) and how is the delivery achieved (implementation process)
- Causal mechanisms (how does the intervention produce the change – how do the participants interact with the intervention, what are the causal pathways, including any unexpected ones)
- Contextual factors (how does context – defined as anything external to the intervention – impact the implementation and the outcomes)

The framework is steeped also in the realist perspective (Pawson, 2004), which emphasises focus on context-mechanism-outcomes constellations to uncover which of the (theorised) working mechanisms impact the outcomes, and how this differs by context - in simpler words, 'what works, for whom, under what circumstances (Moore et al., 2015). The framework also takes a complexity perspective by understanding the interventions as an event introduced in and inseparable from the complex system (Moore et al., 2014, 2019). The intervention is seen as attempting to disrupt the perpetuating mechanisms in the existing systems – and thus cannot be understood in the isolation from the systems in which it is embedded (Hawe et al., 2009). This perspective also has implications for the intervention development and adaptation – to make sure that the intervention fits with the existing system, it is important to involve stakeholders with first-hand knowledge of the systems the intervention attempts to alter (Moore et al., 2014). Concepts such as non-linearity (of the outcomes), feedback loops, tipping points, and unintended consequences should then be considered (Moore et al., 2019).

Both implementation research and process evaluation have in common research approach embedded in the pragmatist view (Creswell & Creswell, 2018), in which the researchers emphasise the primacy of the research problem in question, rather than the primacy of certain methodological approaches grounded in philosophical viewpoint (e.g. quantitative methods in post positive philosophy, and qualitative methods in constructivist worldview). With the pragmatist approach, the researchers can then use all approaches available to help with understanding and choose the methods that best fit the needs and resources, while understanding that the research always occurs in context. This view prompts the use of mixed methods as an approach to inquiry, where a combination of qualitative and quantitative data can provide more insight than either of them alone (Creswell & Creswell, 2018).

**Figure 1.** The process evaluation components, as described in the MRC process evaluation framework (Moore et al., 2014)



In the first part of the thesis, the implementation research and process evaluation-related concepts will be applied within the context of the SCALA intervention (described in Box 1) to answer the following research questions:

- RQ1: What is the perceived appropriateness of alcohol screening and brief advice in Colombia, Mexico, and Peru? (Chapter 2)
- RQ2: What are the anticipated barriers to implementing alcohol screening in Colombia, Mexico, and Peru, as perceived by the key stakeholders? (Chapter 2)
- RQ3: How to conduct a process evaluation of a study evaluating the impact of implementation strategies on the implementation of alcohol screening in primary care practice? (Chapter 3)

## USING PROCESS EVALUATION TO UNDERSTAND THE FACTORS INFLUENCING ALCOHOL SCREENING IMPLEMENTATION IN PRACTICE

The second part of the thesis focuses on two main aspects of process evaluation in relation to alcohol screening as the key behaviour: implementation of training as one of the tested implementation strategies, and examination of (contextual) factors hindering or facilitating the implementation of alcohol screening in practice.



**Box 1: SCALA – testing implementation strategies in a middle-income setting**

SCALA (Scaling up risky alcohol use prevention and management and dealing with comorbid depression in primary health care) was a Horizon 2020-funded quasi-experimental implementation study comparing different implementation strategies aimed at increasing alcohol screening and brief interventions among primary care providers from three Latin American countries: Colombia, Mexico, and Peru (Jane-Llopis et al., 2020). The project also focused on detecting depression in patients with identified high alcohol consumption, as the two outcomes are often comorbid (Boden & Fergusson, 2011).

To guide the development and scale up, Institute for Healthcare improvement's Scaling up framework was used (Barker et al., 2016), with the four steps in the sequence: 1) Set up – understanding the current state and develop initial theory; 2) Developing scalable unit – creating new changes & developing a change package; 3) Testing scale-up, which validates the package in different contexts, and 4) Go to Full Scale, which replicates and adapts to a larger number of contexts.

The implementation strategies tested in SCALA were the following:

- a) **Tailored clinical package:** The clinical package consisted of several materials to be used by the provider when performing screening and brief intervention: 1) A care pathway for screening for risky alcohol use and comorbid depression with corresponding instruments (AUDIT(C)) for alcohol and PHQ2/9 for depression), 2) A provider booklet on alcohol and depression, 3) A patient brief advice booklet, 4) A patient alcohol leaflet and 5) A patient depression leaflet. All materials were tailored in content, visuals, and language to the local context with the help of user panels of patients and providers. Two versions of the clinical package were developed: the main difference between the short and standard one was the complexity of the care pathway, length of the provider booklet, and length of alcohol advice.
- b) **Training sessions:** The training sessions consisted of didactic input, guided discussions, skills and practice modelled through videos and role-play, delivered by previously trained members of the research team, accredited teachers, or addiction consultants. Two versions of the training were developed, a short and standard training. The main difference was in the length and content of the training (as they were based on the differing clinical packages). Additionally, booster sessions were developed to be offered in the months after the training.
- c) **Community support:** Community support consisted of combinations of several activities: 1) establishment of Community Advisory Boards (CABs) of local stakeholders, 2) identification of project champion(s), 3) implementation of locally chosen adoption mechanisms and support systems, and 4) implementation of a communication campaign focusing on reframing heavy drinking as a problem that can be addressed through primary health care-based alcohol screening and brief intervention programmes.

In each country, the intervention municipalities were selected by the investigators, and comparable control municipalities were identified. The recruited primary health care centres (PHCCs) were allocated to one of four arms receiving combinations of different implementation strategies: Arm 1 served as the control group; Arm 2 received a short clinical package and short training in the absence of community support; Arm 3 received a short clinical package and short training in the presence of community support; and Arm 4 received a standard (long) clinical package and standard training in the presence of community support.

The primary outcome (proportion of the consulting patients screened for alcohol consumption) was planned to be compared between the four arms to examine three hypotheses: 1) that the presence of community support leads to more sustainable coverage than its absence; 2) that training leads to higher coverage compared to no training; and 3) that in the presence of community support, the short clinical package and short training do not lead to less measurement coverage than the standard clinical package and standard training. A detailed description of the municipal-level interventions and overall study methodology is available in the main study protocol (Jane-Llopis et al., 2020). Given the varied country contexts, focus on the local adaptation, evaluation of both implementation strategies to achieve better uptake of alcohol screening and brief intervention, and implementation of the practice itself in primary care, process evaluation is also considered a key component of the SCALA project.

## Implementation strategies

Previous research has indicated which implementation strategies are most suitable and work best to improve the implementation of alcohol screening. A meta-analysis from 2015 (Keurhorst et al., 2015) found that multifaceted strategies (combination of professional (e.g. provider training, audit, and feedback), organizational (e.g. change in scope and nature of benefits for providers), and/or patient-oriented strategies (e.g. educational materials for patients)) appeared to have strongest effects on patient's alcohol consumption. Combination of professional and patient-oriented strategies had the highest impact on screening and brief intervention implementation in practice. Furthermore, including other staff beyond only physicians was also beneficial for increased screening (Keurhorst et al., 2015). One of the largest recent implementation trials in five European countries (Anderson et al., 2016) found that providing training and financial reimbursement led to a higher proportion of consulting adult patients screened for alcohol consumption by health professionals. On the other hand, providing an option to refer screen-positive patients to be advised on the internet did not increase screening rates. Nilsen et al. (2006) found that the intensity of the implementation strategies increased implementation in healthcare practice (as seen through material utilisation, screening, and brief intervention rates).

While training (in combination with other strategies) is consistently emerging from these results as one of the key facilitators of screening, as are some characteristics of effective implementation strategies (such as the importance of intensity and combination of different strategies), all of these findings are based on research conducted in high-income countries. There are no published studies on whether these implementation strategies would also apply to low- and middle-income countries specifically to increase alcohol screening. A large systematic review of the effectiveness of implementation strategies in the health care settings of low and middle-income countries – broader than just alcohol screening and brief interventions (Rowe et al., 2018)- showed that technology-based strategies or providing printed information had almost no effects on the targeted outcome, training and supervision had more moderate effects, with their combination further increasing the effects. A combination of community support and provider training had the largest effect sizes.

In the training evaluation literature, most existing research focuses only with the effectiveness of training as an implementation strategy (usually on proximal determinants of behaviour, such as attitudes and intentions), rather than its implementation, (e.g. Smith et al., 2020; Spagnolo et al., 2020; Stockholm Bækgaard et al., 2021; Stoltenberg et al., 2020; Suriyawongpaisal et al., 2020). This leads to the following research question:

- RQ4: How was the SCALA training implemented and how did the implementation factors influence alcohol screening in practice? (Chapter 4)

## Factors influencing implementation of alcohol screening in practice

With regard to the practice of alcohol screening and brief interventions, there has previously been considerable focus on factors facilitating or impeding the implementation - facilitators and barriers (Derges et al., 2017; Johnson et al., 2011; Rosário et al., 2021). The most recent overview of studies examining barriers and facilitators in primary care (Rosário et al., 2021) found that the majority of the studies report views from doctors (general practitioners), and that the most common barriers were related to beliefs about the ability to deliver screening and brief intervention, lack of alcohol-related knowledge, and lack of time. On the other hand, the most commonly reported facilitators were external support (on different levels) and training. This echoes findings from the previous reviews (Derges et al., 2017; Johnson et al., 2011). The limitation of the current literature, however, is that the findings 1) predominantly refer to high-income countries, thus it is not clear if the same factors are relevant also in non-high-income settings 2) predominantly reflect the perspective of doctors (as opposed to other professional roles) and 3) are predominantly based on cross-sectional and qualitative research, thus reflecting perceived factors rather than factors actually influencing the implementation.

The remaining chapters in this thesis thus aim to address these shortcomings and use the developed process evaluation to examine how the factors on different levels – individual, organizational and societal – have interacted with the implementation strategies delivered as part of SCALA (Box 1) and have thus contributed to alcohol screening as the key outcome:

- RQ5: How were demographic factors related to alcohol screening among the trained providers? (Chapter 4)
- RQ6: What were the individual motivational and organizational factors influencing alcohol screening? (Chapter 5)
- RQ7: What were the country and policy factors influencing alcohol screening? (Chapter 6)

## THESIS OUTLINE

This thesis is based on data from the process evaluation conducted within the SCALA study, guided by the UK MRC's process evaluation framework. The overarching focus is the development of a process evaluation plan and identifying the implementation strategy- and context-related factors influencing the implementation of alcohol screening and brief intervention in primary care practice in Colombia, Mexico, and Peru, with separate chapters examining different aspects.

**Chapter 2** describes key stakeholders' views on the perceived appropriateness of alcohol screening and brief intervention and the anticipated barriers to its implementation in practice, and compares them between the three countries (addressing RQ1 and RQ2). **Chapter 3** describes the development of the process evaluation protocol based

on the Medical Research Council's process evaluation framework (addressing RQ3). **Chapter 4** describes the process evaluation of training as an implementation strategy demonstrated to be effective in the outcome evaluation, focusing on examining the impact of training dose, participant response, and contextual factors on the providers' behaviour (addressing RQ4 and RQ5). **Chapter 5** describes how were the providers' baseline motivational and organizational characteristics associated with screening in the first part of the implementation period (pre-COVID), including whether they interacted with the country and study arm (addressing the RQ6). **Chapter 6** describes the broader socio-political context of the three countries and its impact on alcohol screening over the complete implementation period (addressing the RQ7). This includes the impact of COVID-19 as an external shock. Finally, **Chapter 7** brings all the results together and draws conclusions on the key factors influencing the implementation of alcohol screening in the SCALA study. Theoretical and methodological considerations and implications for future research and practice are also discussed.



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## CHAPTER 2

# Perceived appropriateness of alcohol screening and brief advice programmes in Colombia, Mexico and Peru and barriers to their implementation in primary health care

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## ABSTRACT

*Background.* Providing alcohol screening and brief advice (SBA) in primary health care (PHC) can be an effective measure to reduce alcohol consumption. To aid successful implementation in an upper middle-income country context, this study investigates the perceived appropriateness of the program and the perceived barriers to its implementation in PHC settings in three Latin American countries: Colombia, Mexico and Peru, as part of larger implementation study (SCALA).

*Methods.* An online survey based on the Tailored Implementation for Chronic Diseases (TICD) implementation framework was disseminated in the three countries to key stakeholders with experience in the topic and/or setting (both health professionals and other roles, e.g. regional health administrators and national experts). In total, 55 respondents participated (66% response rate). For responses to both appropriateness and barriers questions, frequencies were computed, and country comparisons were made using Chi square and Kruskal-Wallis non-parametric tests.

*Results.* Alcohol SBA was seen as an appropriate program to reduce heavy alcohol use in PHC and a range of providers were considered suitable for its delivery, such as general practitioners, nurses, psychologists and social workers. Contextual factors such as patients' normalized perception of their heavy drinking, lack of on-going support for providers, difficulty of accessing referral services, and lenient alcohol control laws were the highest rated barriers. Country differences were found for two barriers: Peruvian respondents rated SBA guidelines as less clear than Mexican (Mann-Whitney  $U=-18.10$ ,  $p=0.001$ ), and more strongly indicated lack of available screening instruments than Colombian (Mann-Whitney  $U=-12.82$ ,  $p=0.035$ ) and Mexican respondents (Mann-Whitney  $U=-13.56$ ,  $p=0.018$ ).

*Conclusions.* The study shows the need to address contextual factors for successful implementation of SBA in practice. General congruence between the countries suggests that similar approaches can be used to encourage widespread implementation of SBA in all three studied countries, with tailoring based on the few country-specific barriers.

## INTRODUCTION

In all global comparative risk assessments, alcohol use is amongst the ten leading risk factors for both deaths and disability adjusted life years (GBD 2016 Alcohol Collaborators, 2018; Rehm & Imtiaz, 2016), and has been estimated to cause about 3 million deaths annually (Shield et al., 2020). It has been linked with increasing the risk of a number of diseases including alcohol use disorders (Grant et al., 2015), cancers (Bagnardi et al., 2015), liver disease (Rehm et al., 2010), infectious diseases (Imtiaz et al., 2017) and ischaemic (for heavy drinking occasions) (Roerecke & Rehm, 2014) as well as non-ischaemic cardiovascular disease (Rehm & Roerecke, 2017). Although the highest levels of per capita alcohol consumption are found in the European region (World Health Organization, 2018a), the pattern of high levels of alcohol consumption is also prevalent

in the Latin American region (Manthey et al., 2019), along with a high level of negative consequences (World Health Organization, 2018a). In Colombia, Mexico, and Peru, the three Latin American countries included in this study, alcohol use ranked as the fifth (in Mexico) and sixth (in Colombia and Peru) highest risk factor for death and disability in 2017 (Institute for Health Metrics and Evaluation, 2019a, 2019c, 2019b). The estimated percentages of deaths attributable to alcohol in the three countries ranged between 6.4-11% for males and 1.2-2.1% for females, and percentages of total attributable disability adjusted life years were above the world average at 7.6-12% for males and 2.1-3% for females (Gakidou et al., 2017; GBD 2016 Alcohol Collaborators, 2018). These estimations show that the three countries could benefit from widespread implementation of measures to decrease heavy drinking in order to reduce the alcohol related harm.

There is a large and robust evidence base demonstrating positive impacts for alcohol screening and brief advice (SBA) programmes, particularly when delivered in primary health care (PHC) settings. Over 70 randomised controlled trials suggest these simple interventions are both clinically-, and cost- effective at helping clinicians to identify patients drinking excessively, and to provide short, structured advice to those needing to reduce their alcohol consumption (Kaner et al., 2018; O'Donnell, Anderson, et al., 2014). While evidence for the effectiveness of alcohol SBA in PHC comes mainly from studies in high income countries (HIC) (O'Donnell, Wallace, et al., 2014), emerging evidence points to its effectiveness also in middle income countries (MIC) (Joseph & Basu, 2017), including in the Latin American region (Moretti-Pires & Corradi-Webster, 2011; Ronzani et al., 2009). Evidence from PHC settings in HIC also shows that despite the established effectiveness of alcohol SBA, uptake in routine care remains low (Colom et al., 2014; O'Donnell, Wallace, et al., 2014). Likewise, although there are on-going efforts to introduce SBA in Latin American countries (Gelberg et al., 2017), widespread implementation has still not been achieved.

Scaling up SBA programmes will increase the number of patients detected to drink excessively and receiving advice on how to cut down, which could in turn lead to reduced alcohol consumption among the identified risky drinkers and its associated individual and wider societal harms. When aiming to scale up alcohol SBA in a new context however, it is beneficial to engage and consult with local stakeholders in order to adapt the intervention and increase the likelihood of successful and widespread implementation (Theobald et al., 2018). This study assessed the perspectives of key local stakeholders in three municipalities in Colombia, Mexico and Peru on two aspects relevant for successful implementation of SBA in practice: perceived appropriateness of the intervention, and barriers to adoption.

First, appropriateness has been defined as the perceived fit, relevance, or compatibility of the evidence-based programme for a given practice setting, provider, or consumer; and/or the perceived fit of the intervention to address a particular issue or problem (Proctor et al., 2011). Assessment of appropriateness can provide an insight to the social



validity of the intervention as perceived in the local context (World Health Organization, 2016) and to help understand the implementation processes once the intervention is implemented (Proctor et al., 2011). There is currently a lack of information on perceived appropriateness of alcohol SBA in PHC settings in the Latin American context, and no other studies assessing this issue have been identified in the literature.

Second, studying existing or potential barriers to delivery can help identify the reasons behind the evidence-practice gap for a specific intervention or initiative, and thus support the development of more effective strategies to improve successful implementation (World Health Organization, 2016). A large body of literature on barriers to alcohol SBA in PHC exists, suggesting lack of time, lack of training, providers' attitudes, and lack of organizational support, as core factors affecting delivery (Abidi et al., 2016; Derges et al., 2017; Johnson et al., 2011; Rahm et al., 2015; Vendetti et al., 2017). However, most of this evidence comes from HIC (e.g. UK, US, Finland, Sweden, Australia) (Derges et al., 2017; Johnson et al., 2011), and there is less knowledge of whether the barriers are the same in LMIC. In Latin America, for example, the few published studies have focused on barriers to SBA implementation in specialized rather than PHC settings (Hoffman et al., 2016; Isela et al., 2016), and identified factors such as lack of standardized guidelines, lack of training of the providers, lack of providers' perceived role responsibility, lack of time, lack of proper infrastructure and diversity of users affecting their delivery. These barriers echo some of those found in HIC (Derges et al., 2017; Johnson et al., 2011; O'Donnell, Wallace, et al., 2014). However, the evidence suggests there are also some region-specific barriers, such as the lack of proper facilities to deliver the intervention.

In order to facilitate the assessment and comparison of barriers between countries, the Tailored Implementation for Chronic Diseases (TICD) framework was used (Flottorp et al., 2013). This framework groups the determinants of practice into seven domains: 1) guideline factors, 2) individual health professional factors, 3) patient factors, 4) professional interactions, 5) incentives and resources, 6) capacity for organizational change, and 7) social, political, and legal factors (Flottorp et al., 2013). The latter five domains can be further framed as contextual factors (Nilsen & Bernhardsson, 2019). The added value of using such a framework is the recognition of different levels of influence on practice, including the importance of context, going beyond the individual-level factors which are often overly prominent in alcohol SBA implementation studies (Vendetti et al., 2017).

The main aim of the study was thus twofold. First, the study aimed to assess and compare the perceived overall appropriateness of the alcohol screening and brief advice from the perspective of local stakeholders in three municipalities in Colombia, Mexico and Peru. Second, the study aimed to assess and compare the key stakeholders' perspective on the barriers to implementation of SBA in the three countries, and explore any differences based on their occupations.

## METHODS

### Design and setting

The study was carried out as part of larger research project testing implementation strategies for SBA implementation in Colombia, Mexico and Peru (SCALA - Scale up of Prevention and Management of Alcohol Use Disorders and Comorbid Depression in Latin America) (Jane-Llopis et al., 2020). A cross-sectional survey was disseminated in municipalities in the cities of Bogota, Lima and Mexico City. In order to maximize feasibility, the local researches selected the municipalities based on their location in the country and existing networks. To further characterize the setting, main demographic and healthcare system characteristics of the three countries are presented in Table 1.

### Participants

In order to ensure the information was gathered from participants who were familiar with the intervention and/or setting, only stakeholders from the three countries who fulfilled at least one of the following inclusion criteria were invited to participate in the study: a) experience in the field of alcohol (prevention); b) experience in implementing any kind of intervention in PHC; or c) currently working in a PHC centre. In each country, a local research group with knowledge of the local context identified the stakeholders in their network fitting these criteria and invited them to take part in the survey via e-mail. Both health professionals and professionals from other occupations (e.g. regional health administrators) were invited to participate in the survey. Eighty-three stakeholders were invited to participate and in total, 55 stakeholders responded to the survey (66% response rate): 16 from Colombia (53% response rate); 18 from Mexico (75% response rate); and 21 (72% response rate) from Peru.

### Instrument

The survey was disseminated online and questions covered demographic characteristics (gender, country, occupation), and 24 items regarding appropriateness and barriers of alcohol SBA. All the survey questions were developed by the authors, as no instruments based on the TICD framework to study implementation outcomes and barriers were found in the literature.

*Appropriateness* was assessed with three questions covering: 1) fit of intervention to the problem, 2) fit to the local setting, and, 3) fit of the provider. Respondents were asked to rate their agreement with alcohol SBA being an appropriate approach to reduce heavy alcohol use, and the PHC centre being a suitable setting to conduct alcohol SBA on 5-point Likert scales (1=completely disagree to 5=completely agree). Additionally, they had to indicate which health professionals they considered suitable to carry out alcohol SBA in primary care.

**Table 1.** Demographic and health system characteristics in Colombia, México and Perú

	Colombia	México	Perú
<i>Main country demographics</i>	In 2018, Colombia had population of 48 258 494. 51.2% were female, 75.5% were living in urban areas. Age distribution was 24.0% under 15, 67% 15-64, 8.8% 65+. <sup>1</sup>	In 2015, Mexico had population of 119 938 473. 51.4% were female, 76.8% were living in urban areas. Age distribution in 2010 was 29.3% under 15, 64.4% 15-64, 6.3% 65+. <sup>2</sup>	In 2017, Peru had population of 31 237 385. 50.5% were female, 81.9% were living in urban areas. Age distribution was 26.5% under 15, 65.3% 15-64, 8.2% 65+. <sup>3</sup>
<i>Healthcare system, including PHC</i>	<i>Sistema General de Seguridad Social en Salud</i> (SGSSS, General System of Social Security in Health). Most people are affiliated with the SGSSS through contributory regime (employed people) or the subsidized regime (low income population, indigenous, displaced, incarcerated population). There is also the special benefit regime (armed forces, teachers, and a state-owned petroleum company) and private insurance (voluntary). <sup>4</sup> In 2016, the new Comprehensive Health Care Model (Modelo Integral de Atención en Salud, MIAS) was introduced, with the aim to strengthen primary health care delivery and improve population access to healthcare, through increasing the responsibility and decision-making capacity of health teams. <sup>5</sup> In 2016, health insurance coverage reached 96% of the population, 26% lacked access to health services (data from 2016). <sup>5</sup> Based on 2017 data, health expenditure represented 7% of GDP, out-of-pocket payments counted as 16% of current health expenditure. <sup>6</sup>	Mexican health care works by three-tier system: IMSS (Mexican Social Security Institute) covers employees in private and public sector. Seguro Popular (recently replaced by Instituto Nacional Salud para el Bienestar) is set up for those who don't qualify for IMSS tier due to financial reasons or because of preexisting conditions. There is also option of private insurance. <sup>7</sup> In 2015, a Comprehensive Health Care model (MAI) was introduced in order to standardize health care services, optimize health resources and infrastructure, and promote citizens' participation, which placed PHC one of the most important strategies for healthcare in Mexico. <sup>7</sup> In 2014, health insurance coverage reached 80% of the population, 20% lacked access to health services. <sup>7</sup> Based on 2017 data, health expenditure represented 6% of GDP, out-of-pocket payments counted as 41% of current health expenditure. PHC Expenditure represented 44% of health expenditure. <sup>6</sup>	The Peruvian health care system is a four-tier system, including the following: public (Ministry of Health and district facilities, police and armed forces facilities); the social insurance system (EsSalud); and private for-profit and private not-for-profit (nongovernmental organization and religious) facilities. It is a decentralized health system, where the national level that sets overall policies and frameworks, and the regional and local authorities are responsible for implementation. <sup>8</sup> There are three categories of facilities that provide PHC: primary (I-1 to I-4), secondary (II-1 and II-2) and tertiary facilities. PHC is provided through a doctor-supported infrastructure; only in category I-1 facilities are supported by nurses, midwives or health technicians. <sup>8</sup> In 2016, health insurance coverage reached 76% of population, 66% lacked access to health services. <sup>5</sup> Based on 2017 data, health expenditure represented 5% of GDP, out-of-pocket payments counted as 28 % of current health expenditure. <sup>6</sup>
<i>Distribution of health professionals</i>	In 2018, there were 108 499 medical doctors (21.85 per 10 000 population) and 66 095 nursing and midwifery personnel (13.31 per 10 000 population). <sup>10</sup>	In 2017, there were 297 307 medical doctors (23.83 per 10 000 population) and 302 363 nursing and midwifery personnel (23.96 per 10 000 population). <sup>10</sup>	In 2016, there were 40 352 medical doctors (13.05 per 10 000 population) and 78 048 nursing and midwifery personnel (24.40 per 10 000 population). <sup>10</sup>

Table 1. Continued.

	Colombia	México	Perú
SCALA participating municipalities	Intervention: Soacha (population: 93,154; located in metropolitan area of Bogota, part of department of Cundinamarca). <sup>1</sup> Control: Funza (pop: 112,254), Madrid (93,154); both located in Western Savanna Province and part of the department of Cundinamarca, 25 km outside Bogota. <sup>1</sup>	Intervention: Tlapan (650,567)*, Benito Juárez (385,439), Álvaro Obregón (727,034); all one of 16 municipalities of Mexico City. <sup>2</sup> Control: Miguel Hidalgo (372,889), Xochimilco (415,007), both one of 16 municipalities of Mexico City. <sup>2</sup> *two of PHCUs from this municipality are in control arm	Intervention: Callao (pop: 451,260); Provincial capital and one of the seven districts in Callao province, part of Callao region. Located at the West area of Lima, and borders the Pacific ocean. <sup>3</sup> Control: Chorrillos (314,241) and Santiago de Surco (329,152); both one of the 43 districts of Lima province, located in Lima region, bordering each other. <sup>3</sup>

1. DANE (2018). Censo nacional de población y vivienda. Proyecciones de población. Available from: <https://www.dane.gov.co/index.php/estadisticas-por-tema/demografia-y-poblacion/proyecciones-de-poblacion> [accessed 23.9.2020]

2. INEGI (n.d.). Banco de indicadores, 2015. Available from <https://www.inegi.org.mx/app/indicadores/?t=0070&ag=09014#D00700060> [accessed 23.9.2020]

3. INEI (2017). Censos nacionales 2017: XII Censo de Población, VII de Vivienda y III de Comunidades Indígenas. Sistema de Consulta de Base de Datos. Available from: <http://censos2017.inei.gob.pe/redatam/> [accessed 23.9.2020]

4. OECD (2015). *OECD Reviews of Health Systems: Colombia 2016*. Paris: OECD Publishing.

5. Bascolo, E., Houghton, N., & Del Riego, A. (2018). Lógicas de transformación de los sistemas de salud en América Latina y resultados en acceso y cobertura de salud. *Revista Panamericana de Salud Pública*, 42, e126.

6. WHO (n.d.) Global Health Expenditure database: <https://apps.who.int/oha/database/> [accessed 7.10.2020]

7. WHO (2017). Primary health care systems (PRIMASYS): case study from Mexico, abridged version. Geneva: World Health Organization.

8. WHO (2017). Primary health care systems (PRIMASYS): case study from Peru, abridged version. Geneva: World Health Organization.

9. WHO (2017). Primary health care systems (PRIMASYS): case study from Colombia, abridged version. Geneva: World Health Organization. 10.0 WHO (n.d.) Global Health Workforce Statistics, the 2018 update, Available from: <https://apps.who.int/gho/data/node.main.HWFRP?lang=en> [accessed 7.10.2020]

The development of a list of *barriers* to the implementation of SBA was guided by the TICD framework (Flottorp et al., 2013), based on prior research identified through an examination of reviews in this area (Derges et al., 2017; Johnson et al., 2011; O'Donnell, Wallace, et al., 2014), and on recommendations of an expert panel with experience in the topic. The barriers identified in the literature have been extracted and categorized in the TICD framework under relevant domains and determinant headings. The list was shared with the expert panel, which selected additional determinants considered important based on their knowledge and experience. The full list of barrier items based on literature review and expert panel recommendations consisted of 46-items. This initial list was then shared with the local research teams in the three countries. Based on their feedback, the full list was shortened in order to increase the likelihood of response. Next, the most relevant determinants were selected by the central research team based on consultation with the local research teams in the three countries. The final, shortened list contained 21 items, with each categorized into the corresponding TICD framework determinants in one of the domains: Guideline factors, Individual health professional factors, Patients factors, Professional interactions, Incentives and Resources, Capacity for organizational change, Social legal and political factors. Questions were rated on a 5-point Likert scale (1=completely disagree, it is not a barrier to 5=completely agree, it is a large barrier; see Table 4 for all 21 items). Both the long and shortened lists of barriers are available as supplementary material.

The survey was developed in English, translated to Spanish, and further refined based on feedback from the local research teams. Before dissemination, two to three experts per country piloted the survey.

## Data collection

The data were collected in April and May 2019 using Formdesk, an online survey software. Respondents were invited to participate through e-mail by the local researcher and were sent a reminder after a week in case of no response. No identifiable data were collected, and the survey was anonymous. Participants had to sign the informed consent electronically before they were able to participate in the survey. Ethical review was not required for anonymous online surveys in all three countries.

## Data analysis

IBM SPSS Statistics 24 was used for data analysis. Data was first analysed separately for each of the countries (Colombia, Mexico, Peru), and for barriers, also by occupation. To obtain the percentages of respondents agreeing with the statements, the number of participants agreeing or completely agreeing with an item were divided by the number of all participants. Medians and interquartile ranges were computed. Due to the small sample size and non-normal distribution, as tested with one-way Kolmogorov-Smirnov test, non-parametric tests (Kruskal-Wallis H for medians and Chi square for percentages) were used for comparisons. Where additional post-hoc tests (Mann-Whitney U) were used, Bonferroni correction was applied.

## RESULTS

In total, 55 respondents participated in the survey. Their demographic characteristics are presented in Table 2. Approximately half of the participants were healthcare providers, out of which the majority were general practitioners (GPs) and psychologists.

**Table 2.** Characteristics of key local stakeholders included in the study

	Overall		Colombia		México		Perú	
	N	%	N	%	N	%	N	%
<i>Country</i>								
Colombia	16	29.09						
México	18	32.73						
Perú	21	38.18						
<i>Gender</i>								
Female	34	61.82	13	81.25	8	44.44	13	61.90
Male	21	38.18	3	18.75	10	55.56	8	38.10
<i>Occupation</i>								
Healthcare provider	28	50.91	9	56.25	6	33.33	13	61.90
GP	12	21.82	4	25.00	2	11.11	6	28.57
Psychologist	14	25.45	5	31.25	4	22.22	5	23.81
Other healthcare provider*	2	3.64	0	0.00	0	0.00	2	9.52
Other occupations	26	47.27	7	43.75	12	66.67	7	33.33
Civil servant	8	14.55	3	18.75	4	22.22	1	4.76
Civil society representative	8	14.55	1	6.25	3	16.67	4	19.05
Academic/researcher	6	10.91	2	12.50	4	22.22	0	0.00
Other**	4	7.26	1	6.25	1	5.56	2	9.52
Unknown	1	1.82	0	0.00	0	0.00	1	4.76

\*midwife, social worker \*\*PHC centre manager, national public policy advisor, national consultant and private treatment centre employee

## Appropriateness

As seen in Table 3, there were high proportions of respondents (75% or above, with one exception) considering alcohol SBA to be an appropriate approach to reduce heavy alcohol use (fit to the problem), and the PHC centre being a suitable place to perform alcohol SBA (fit to the setting). Considering the fit of provider, respondents in all three countries indicated four types of professionals to be appropriate to carry out alcohol SBA (all percentages above 80%): GPs, nurses, psychologists and social workers.

Kruskal-Wallis H test showed a significant difference between countries' perception of alcohol SBA as an appropriate approach to reduce heavy alcohol use, with post hoc tests revealing a significant difference between Colombian (most endorsements) and Peruvian respondents (least endorsements). No other county differences were found.

## Barriers to implementation of alcohol SBA

In Table 4, the percentages concerning perceived barriers for implementation are presented for all the three countries, as well as medians and their comparisons. Four

barriers stood out with having high rating (defined as two thirds or more of respondents) in all three countries: heavy drinking patients' beliefs that their drinking is normal (Patient factors TICD domain); lack of on-going support for providers (Assistance for clinicians TICD domain); difficulty of accessing referral services (Professional interactions TICD domain); and lenient laws and regulations influencing price and availability that encourage cultural tolerance to alcohol (Social, political and legal factors TICD domain).

**Table 3.** Response rates and comparison of perceived appropriateness of alcohol SBA in Colombia, México and Perú

	% Agree*		Comparison				p**
	Colombia	México	Perú	Colombia	México	Perú	
	n = 16	n = 18	n = 21	Me (IQR)†	Me (IQR)	Me (IQR)	
Consider alcohol SBA is an appropriate approach to reduce heavy alcohol use	87.50	77.78	57.14	5.00 (1.00)	4.50 (1.25)	4.00 (1.50)	0.01 <sup>a</sup>
Consider PHC centre is a suitable place to carry out alcohol SBA	100.00	83.33	76.19	5.00 (0.75)	5.00 (1.00)	4.00 (1.50)	0.10
Providers considered suitable to carry out alcohol SBA in primary healthcare:							
GP	93.75	94.44	80.95				0.31
Nurse	87.50	77.78	90.48				0.51
Psychologist	93.75	100.00	95.24				0.59
Social worker	87.50	94.44	85.71				0.66
Midwife	37.50	38.89	52.38				0.59
Other	12.50	33.33	14.29				0.22

**Legend:**

†Me-Median, IQR-Interquartile range

\* % summed responses Agree and Completely agree for the first two rows, % Yes for the latter six rows

\*\*Kruskal Wallis H test for the first two rows, Chi square test for the latter six rows

<sup>a</sup> Post hoc test showed significant difference between Peru and Colombia (Mann-Whitney U=15.440, p=0,007).

Three barriers had high ratings in two countries: lack of financial (Colombia and Mexico) and non-financial incentives (Colombia and Peru) (both Incentives and Resources TICD domain), and lack of necessary organizational changes (Mexico and Peru) (Capacity of organizational change TICD domain). Certain barriers with high agreement percentages were also country specific: lack of sufficient staff for implementation in the centre as well as patients' preference not to discuss their alcohol consumption in Peru (the first, Social, political and legal factors and the latter, Patient factors TICD domain), and lack of providers' time in Colombia (Individual health professional factors TICD domain). The barriers of SBA not being culturally appropriate, not feasible in practice, and requiring too much effort (all in Guideline factors TICD domain) were lowest rated in all three countries, with most percentages under 20%.

**Table 4.** Response rates and comparison of perceived barriers to alcohol SBA by country

TICD Domain	TICD Determinant of practice	% Agree*			Comparison			p**
		COL	MEX	PER	COL	MEX	PER	
1. Guideline factors	Clarity	n = 16 31.25	n = 18 5.56	n = 21 42.86	Me (IQR)† 2.00 (3.00)	Me (IQR) 2.00 (2.00)	Me (IQR) 3.00 (1.00)	0.001 <sup>a</sup>
	Effort	12.50	11.11	19.05	2.00 (1.00)	1.00 (1.00)	2.00 (2.00)	0.50
	Feasibility	6.25	16.67	14.29	2.00 (1.00)	2.00 (2.00)	2.00 (1.00)	0.89
	Cultural appropriateness	6.25	11.11	4.76	1.00 (1.00)	1.00 (1.00)	2.00 (1.00)	0.16
	Skills needed to adhere	62.50	50.00	47.62	4.00 (2.75)	3.50 (3.00)	3.00 (2.50)	0.84
2. Individual health professional factors	Expected outcome	56.25	44.44	42.86	4.00 (2.00)	3.00 (1.00)	3.00 (2.00)	0.84
	Intention and motivation	50.00	61.11	57.14	3.50 (2.00)	4.00 (1.5)	4.00 (2.00)	0.91
	Self-efficacy	56.25	44.44	61.90	4.00 (1.75)	3.00 (2.00)	4.00 (2.00)	0.93
	Emotions	56.25	50.00	61.90	4.00 (2.00)	3.50 (2.25)	4.00 (1.00)	0.83
	Capacity to plan change	87.50	61.11	47.62	4.00 (1.00)	4.00 (3.00)	3.00 (2.00)	0.08
3. Patient factors	Patient beliefs and knowledge	93.75	72.22	80.95	4.00 (0.75)	4.00 (2.00)	4.00 (1.00)	0.89
	Patient preferences	43.75	61.11	71.43	3.00 (2.00)	4.00 (2.00)	4.00 (1.50)	0.41



Table 4. Continued.

		% Agree*						
		COL	MEX	PER	COL	MEX	PER	
4. Professional interactions	Referral processes	81.25	77.78	76.19	4.00 (1.00)	4.00 (1.25)	4.00 (2.00)	0.74
	There are difficulties with access to referral services for patients with alcohol problems							
5. Incentives and resources	Availability of necessary resources	12.50	11.11	38.10	1.50 (1.00)	1.00 (1.25)	3.00 (2.00)	0.008 <sup>b</sup>
	Instruments for screening and giving advice to heavy drinkers do not exist							
	Financial incentives and disincentives	68.75	66.67	42.86	4.00 (2.00)	4.00 (1.50)	3.00 (2.00)	0.32
	There is lack of financial incentives for providers to carry out screening and advice							
	Nonfinancial incentives and disincentives	75.00	61.11	66.67	4.00 (0.75)	4.00 (1.00)	4.00 (1.00)	0.84
6. Capacity for organizational change	There is lack of non-financial incentives for providers to carry out screening and advice							
	Assistance for clinicians	93.75	77.78	95.24	4.00 (0.00)	4.00 (0.25)	4.00 (1.00)	0.17
7. Social, political and legal factors	There is lack of support by the leadership in PHC centres to support and implement programmes of screening and advice							
	Capable leadership	43.75	55.56	57.14	3.00 (1.75)	4.00 (1.00)	4.00 (1.50)	0.36
7. Social, political and legal factors	Assistance for organizational changes	56.25	66.67	80.95	4.00 (1.75)	4.00 (1.00)	4.00 (1.00)	0.11
	There is lack of necessary organizational changes in PHC centres to implement screening and advice							
7. Social, political and legal factors	Economic constraints on the health care budget	50.00	44.44	76.19	3.5 (2.00)	3.00 (2.00)	4.00 (1.00)	0.08
	There is lack of sufficient staff in PHC centres to be able to implement programmes for screening and advice							
7. Social, political and legal factors	Legislation	93.75	66.67	90.48	4.00 (1.00)	4.00 (2.25)	4.00 (1.00)	0.63
	Laws and regulations in the country that influence the price and availability of alcohol are too lenient, encouraging cultural tolerance to alcohol							

**Legend:**

x Domains 3-7 can also be considered as contextual factors, based on Nilsen &amp; Bernhardsson (2019)

† Me-Median, IQR-Interquartile range

\* % responses Agree and Completely agree

\*\* Kruskal Wallis H test

<sup>a</sup> Post hoc test showed significant difference between Mexico and Peru (Mann-Whitney U=-18.10, p=0.001)<sup>b</sup> Post hoc test showed significant difference between Mexico and Peru (Mann-Whitney U=-12.82, p=0.035)

**Table 5.** Response rates and comparison of perceived barriers to alcohol SBA by occupation

TICD Domain	TICD Determinant of practice	%Agree*				p**		
		GP	Psychologist	Other occupation	Comparison GP Psychologist Other occupation			
1.Guideline factors	Clarity	n=12 41.67	n=14 21.43	n=26 23.08	Me (IQR) † 2.50 (2.75)	Me (IQR) 3.00 (2.25)	Me (IQR) 2.00 (2.25)	0.56
	Effort	25.00	7.14	15.38	2.00 (2.75)	1.00 (1.00)	2.00 (2.00)	0.28
	Feasibility	16.67	7.14	15.38	2.00 (1.75)	1.50 (1.00)	2.00 (1.25)	0.48
	Cultural appropriateness	0.00	7.14	11.54	1.50 (1.00)	1.00 (1.00)	1.50 (1.00)	0.75
2.Individual health professional factors	Skills needed to adhere	25.00	78.57	53.85	1.50 (2.5)	4.00 (3.00)	4.00 (2.00)	0.03 <sup>a</sup>
	Expected outcome	8.33	57.14	61.54	2.00 (0.00)	4.00 (3.00)	4.00 (1.00)	0.00 <sup>b</sup>
	Intention and motivation	0.00	57.14	80.77	1.00 (1.00)	4.00 (3.00)	4.00 (0.00)	0.00 <sup>c</sup>
	Self-efficacy	25.00	57.14	65.38	2.00 (1.75)	4.00 (3.00)	4.00 (1.25)	0.1
3.Patient factors	Emotions	33.33	57.14	65.38	2.50 (2.00)	4.00 (4.00)	4.00 (2.00)	0.16
	Capacity to plan change	50.00	85.71	61.54	3.00 (2.75)	4.00 (4.00)	4.00 (1.25)	0.16
4. Professional interactions	Patient beliefs and knowledge	58.33	85.71	88.46	4.00 (2.75)	4.00 (4.00)	4.00 (1.00)	0.29
	Patient preferences	33.33	78.57	57.69	3.00 (2.00)	4.00 (4.00)	4.00 (2.00)	0.14
	Referral processes	66.67	78.57	88.46	4.00 (3.00)	4.00 (4.00)	4.00 (1.00)	0.84

Table 5. Continued.

TICD Domain	Determinant of practice	%Agree*		Comparison		p**
		GP	Psychologist	GP	Psychologist	
5 Incentives and resources	Availability of necessary resources	n=12	n=14	n=26	n=26	0.97
	Financial incentives and disincentives	33.33	14.29	19.23	19.23	2.00 (2.00)
	Nonfinancial incentives and disincentives	58.33	64.29	61.54	61.54	4.00 (3.25)
	Assistance for clinicians	66.67	78.57	65.38	65.38	4.00 (4.00)
	Capable leadership	83.33	92.86	88.46	88.46	4.00 (3.00)
6 Capacity for organizational change	Capable leadership	66.67	28.57	61.54	61.54	4.00 (1.00)
	Assistance for organizational changes	66.67	78.57	65.38	65.38	4.00 (3.00)
7 Social political and legal factors	Economic constraints on the health care budget	41.67	64.29	61.54	61.54	4.00 (3.00)
	Legislation	83.33	92.86	80.77	80.77	5.00 (4.00)

**Legend:**

x Domains 3-7 can also be considered as contextual factors, based on Nilsen & Bernhardtsson (2019)

† Me-Median, IQR-Interquartile range

\* % responses Agree and Completely agree

\*\*Kruskal Wallis H test

<sup>a</sup> Post hoc test showed significant difference between GPs and psychologists (Mann-Whitney U=-14.69, p=0.023)

<sup>b</sup> Post hoc test showed significant difference between GPs and psychologists (Mann-Whitney U=-16.62, p=0.009) and GPs and other occupations (Mann-Whitney U=-19.72, p≤0.001)

<sup>c</sup> Post hoc test showed significant difference between GPs and psychologists (Mann-Whitney U=-19.05, p=0.002) and GPs and other occupations (Mann-Whitney U=-22.91, p≤0.001)

Country comparison showed two barriers with a statistically significant difference in their ratings: the guidelines for screening and brief advice not being clear enough, and instruments for screening not being available. Post-hoc tests indicated that Peruvian respondents were more likely to endorse lack of guideline clarity as compared to Mexican respondents, and more likely to cite lacking availability of SBA instruments as a barrier compared to both Colombian and Mexican respondents. Despite the differences, those were not the most frequently endorsed barriers.

As health professional level barriers are commonly mentioned in previous qualitative research in this area (e.g. Derges et al., 2017; Johnson et al., 2011), but were not among the highest rated barriers in our survey (with agreement percentages between 42% and 62%), we decided to further explore barriers by occupation. The available sample allowed us to compare GPs' responses with responses from psychologists and other occupations (non-healthcare providers). Comparison showed statistically significant differences in three determinants from the Individual health professional factors TICD domain: lack of skills to implement the intervention, providers thinking that alcohol SBA will not help their patients, and not considering providing alcohol SBA as their responsibility (Table 5). In all three cases, the GPs rated these barriers significantly lower than psychologists and other professionals.

## DISCUSSION

The aim of this study was to assess and compare the perceived general appropriateness of alcohol screening and brief advice and the perceived barriers to its implementation from the perspective of local stakeholders in three municipalities in Colombia, Mexico and Peru.

The study showed that delivering alcohol SBA in PHC setting was generally seen as an appropriate intervention to reduce heavy alcohol use in these three Latin American countries, although there were small differences, with SBA being considered more appropriate among Colombian compared to Peruvian respondents. In all three countries, GPs, nurses, psychologists and social workers were considered suitable for delivery of SBA in primary care. This suggests that scaling up SBA programmes in PHC in the Latin American context might be achieved by expanding the range of providers. Whilst many studies from HIC have shown the effectiveness of SBA with GPs as the intervention provider (O'Donnell, Anderson, et al., 2014), there is also emerging evidence of effectiveness of non-physician led alcohol interventions (Sullivan et al., 2011), such as nurses (Platt et al., 2016) or social workers in social service settings (Schmidt et al., 2015). Another consideration not explored in the study, but relevant for practice and further investigation, is the possibility of interprofessional approaches, where team members of different occupations work together to improve health outcomes for the patient (Zwarenstein et al., 2005). In case of alcohol screening in brief advice this could mean screening done by one member of the team (e.g. nurse), and advising by another (e.g. GP or psychologist). This could enable scaling up via better integration of SBA into

the existing workflow. Further research is needed however on the effectiveness and patient acceptability of SBA delivered by non-physicians in the LMIC context.

The assessment of barriers also showed that the pattern in perception of barriers was similar in all three countries. This implies that a similar approach can be used to implement alcohol SBA across these particular countries, with tailoring efforts focussed on the specific parts needed to improve fit in the local context. In general, intervention-related factors (Guideline factors TICD domain) such as lack of feasibility or cultural fit were not seen as major barriers, which echoes previous evidence from the HIC context. Yet countries differed concerning SBA guideline clarity: at least a third of Colombian and Peruvian respondents mentioned lack of clarity as a barrier; whereas the percentage among Mexican respondents was much lower. This reflects the differing national contexts with regard to the existing guidelines: in Mexico, official standards establish the obligatory procedures and criteria for mandatory prevention, treatment and control of addictions, which include asking questions on alcohol use (*Norma Oficial Mexicana NOM-028-SSA2-2009 Para La Prevención, Tratamiento y Control de Las Adicciones*, 2009), and including this information in the patient's history (*Norma Oficial Mexicana NOM-004-SSA3-2012 Del Expediente Clínico*, 2012), specifically in primary health care context. In Colombia, the alcohol SBA recommendations are included as part of clinical practice guidelines that focus on detection and treatment of alcohol abuse and dependence on primary, secondary and tertiary care level (Ministerio de Salud y Protección Social, 2013), but there are no official standards as in Mexico. Finally, in Peru, recommendation for providers to deliver alcohol screening can be considered implicitly included in general recommendations to perform mental health related screening (alcohol use disorder being considered as one of subcategories) (Ministerio de Salud Peru, 2018), therefore making the alcohol SBA guidelines potentially less clear. However, when considered in light of other higher rated barriers, improving clarity of guidelines (at least in Colombia and Peru) is not the main priority.

Looking at the results from the perspective of the TICD framework, the barriers with the highest agreement in all countries can be categorized as contextual (as defined in Nilsen and Bernhardsson, 2019). Specifically, respondents in all three countries highlighted heavy drinking patients' thinking that their drinking is normal; lack of on-going support for providers; difficulty of accessing referral services; and lenient laws and regulations influencing price and availability encouraging cultural tolerance to alcohol, as key factors affecting implementation. Again, these barriers reflect those identified in HIC literature, where patients' normalization of heavy drinking, referral issues and organizational factors, including lack of a supportive policy environment, are commonly cited as obstacles to delivery (Anderson et al., 2003; Derges et al., 2017; Johnson et al., 2011; Vendetti et al., 2017). To tackle the barrier of patients' normalized perception of their own heavy drinking, there is a need for communication strategies surrounding SBA programmes to involve a reframing component, which highlights that much alcohol related harm is experienced by those drinking at non-dependent

levels (e.g. see Heather, 2006). Lack of restrictions for on/off premise sales of alcoholic beverages or limited restrictions on alcohol advertising in the participating countries might have contributed to the perception of lenient alcohol control policies expressed by the stakeholders in this survey (World Health Organization, 2018a). Indeed, recent research has highlighted the need to address these types of policy factors in LMICs in order to reduce alcohol related harm (Shield et al., 2020).

Barriers from the Individual health professional factors TICD domain were neither among the highest nor among the lowest rated barriers. This might have been influenced by differing opinions based on occupation, as shown by the comparison between GPs, psychologists and others. The provider related factors such as lack of skills, lack of responsibility and belief about the intervention not helping the patients, were considered much less of a barrier by the GP respondents compared to psychologists and other occupations. Studies from HIC countries however suggest that attitudinal factors do hinder GPs' implementation of SBA, such as lower role security and therapeutic commitment (Anderson et al., 2003), as well as aligning with the disease rather than preventive model of work, and valuing individual personal responsibility for protection from alcohol related harm (Anderson et al., 2014). Whilst the sample is too small to draw definite conclusions, some of the possible reasons for our results may be selection bias (i.e. GPs participating in the survey were potentially already more educated and aware about alcohol), GP's higher self-efficacy when it comes to delivering interventions in PHC, or psychologists seeing the brevity of the intervention as less appropriate to their practice. Nevertheless, these preliminary results point us in direction of the health professional-related barriers potentially being profession-specific, and suggest that more research is needed to explore the perspectives of and barriers experienced by other occupations.

Results of this study suggest that multi-level strategies are needed to address barriers to widespread SBA implementation in Colombia, Mexico and Peru. First, although individual health professional level factors were not ranked highest, barriers relating to a perceived lack of skills, self-efficacy, role-legitimacy or and belief in intervention effectiveness can be addressed through means of provider training programmes. The preliminary differences found here between GPs and psychologists suggest that tailoring training might be necessary, using different approaches for providers of different occupations, based on the specific needs, as well as specific strengths, of different healthcare providers (Wamsley et al., 2018).

Yet, whilst training can help increase providers' intervention-related knowledge, skills and self-efficacy, previous research has shown that is unlikely to be sufficient to improve implementation on its own, particularly over the longer term (Anderson, 2004). Looking at the TICD domains of the highest rated barriers in this study, it can be seen that they all relate to the wider social, political and cultural SBA delivery context. Thus, interventions that provide continuous support for the providers (Anderson et al., 2016), and efforts to

change the community social norms (Anderson et al., 2018) related to alcohol (through education or legislation) are also needed to address the perceived relevant barriers in these three countries. This has been shown also through previous work in HIC, where series of multi-country studies concluded that education and support in the working environment are necessary to increase involvement of healthcare providers (in that case GPs) in managing alcohol problems (Anderson et al., 2003; Anderson et al., 2014).

### **Strengths and weaknesses**

This study contributes to the literature on SBA implementation with evidence from an underexplored region (Latin America) using a quantitative approach that allows for direct comparisons between three countries. The list of barriers to implementation of alcohol SBA was developed within a theoretical framework, combining evidence from previous empirical studies, and recommendations from an expert panel. Furthermore, inclusion of a range of key local stakeholders with different occupations and experience in the topic allowed for a broader perspective on barriers to implementation, assessing determinants on various professional and health system levels. We encourage the use of the proposed list of barriers in future SBA barrier assessments in PHC or other occupations across Latin America and elsewhere, if locally adapted.

Beside the abovementioned strengths, the current study also has limitations. One, due to its focus on a municipal context in three Latin American countries and a limited range of eligible stakeholders with enough experience to be consulted, the low sample size limits broader generalization of the results. Additionally, as the study focused only on the three countries participating in SCALA project, the results cannot necessarily be generalized to other Latin American countries. While comparison between the three countries points to predominant similarities rather than differences in barriers perception, further local assessment would be necessary before scaling up alcohol SBA beyond Colombia, Mexico and Peru. Two, there are also some general shortcomings of the survey approach to identifying barriers that should be acknowledged: whilst this approach enables us to compare statistically the relative importance of specific barriers to implementation, as these barriers were pre-determined by the team constructing the questionnaire, some other relevant barriers might have been overlooked (Nilsen, 2015). In our case, the list of barriers had to be considerably shortened in its final form in order to ensure respondents' completion of the survey, resulting in potentially relevant barrier/s being excluded. However it is important to note that this shortcoming was addressed by consulting with the experts and local research partners when determining the final list. Three, the perceived barriers may not necessarily correspond to the actual barriers encountered when implementing the intervention (Nilsen, 2015). This was beyond the scope of our study, but our findings provide a useful baseline data, whereby future intervention evaluations can compare the encountered barriers to the perceived ones identified in our study. Four, this study did not look at the patient perspective on the implementation of alcohol SBA, which should also be explored in further studies, in line with previous research, such as (Lock, 2004; Hutchings et al., 2006) Furthermore,

among health professionals our sample predominantly contained perspectives of GPs and psychologists, and further perspective from other professionals also considered appropriate to deliver alcohol SBA (nurses and social workers) should be included in any follow-up research.

### **Future perspectives**

Findings of the study point to the necessity of considering barriers on a broader scale than just at the individual provider level. For SCALA project, this means designing process evaluation-related data collection in a way to capture the broad spectrum of possible experienced barriers and facilitators. Results will also be used along other data collected in the SCALA project to help explain the outcome on provider level - why did or did not providers implement alcohol SBA in their daily practice. Results may also contribute to wider implementation of alcohol SBA in Latin American countries. We encourage other researchers and practitioners to use the developed instrument (available as the supplementary material) for rapid assessment of appropriateness and barriers in any novel LMIC context and as an aid when tailoring the intervention to the specific local context.

### **Conclusion**

This study investigated local stakeholders' views of the appropriateness of alcohol SBA, as well as their perceived barriers to its implementation in three municipalities in Colombia, Mexico and Peru. Implementation of SBA in PHC is generally considered as an appropriate means to reduce alcohol related harm in all three countries. In contrast to evidence from HIC countries, context-related factors were cited as major barriers to SBA implementation, namely lack of support for providers, difficulties with accessing referral services, patients underestimating the danger of their consumption levels and lax alcohol control legislation. Despite the similarities, it is still necessary to be sensitive to existing differences and tailor of the specific SBA programs for each country.



## Appendix: Initial list of barriers categorized in the TICD framework

Table A1. Overview of TICD framework determinants and the initially selected items

TICD framework - domains	TICD framework determinants	Selected based on literature review	Selected by the expert panel	Item description	Final chosen item
Quality of evidence supporting recommendation	Strength of recommendation				
	Clarity	x		Guidelines for screening and giving advice for heavy drinking are not clear enough	x
Recommendation	Cultural appropriateness	x	x	The guidelines on how to perform alcohol screening and brief interventions that exist are poorly designed	
	Cultural appropriateness			Screening and giving advice for heavy drinking is not appropriate in our culture	x
Guideline factors	Accessibility of recommendation				
	Source of the recommendation				
	Consistency with other guidelines				
	Feasibility		x	Screening and giving advice for heavy drinking in our everyday practice is not feasible	x
	Accessibility of the intervention		x	There is lack of suitable materials that could be used for alcohol screening and brief interventions	
	Compatibility		x	The approach of screening and brief intervention to address heavy alcohol use is not compatible with current primary care practice	
	Effort		x	Screening and giving advice for heavy drinking is too much work to do	x
	Trialability		x	There is lack of appropriate training for providers on how to do alcohol screening and brief interventions	
	Observability				
	Knowledge and skills	Domain knowledge	x		Providers do not know enough about risky drinking and harmful alcohol use / impact of alcohol on health
	Awareness and familiarity with the recommendation	x		Providers are not familiar with the screening tools and content of the brief intervention	

Table A1. Continued.

TICD framework - domains	TICD framework determinants	Selected based on literature review	Selected by the expert panel	Item description	Final chosen item
	Knowledge about own practice				
	Skills needed to adhere		x	Providers do not have the skills to implement screening and brief advice programs for heavy drinking	x
	Agreement with the recommendation	x		Providers view alcohol as delicate subject to raise in consultation	
	Attitudes towards guidelines in general	x		Alcohol prevention is not priority for providers	
	Expected outcome	x		Providers think doing alcohol screening and brief intervention will have negative impact on their relationship with the patient	
		x		Providers think that screening and giving advice for heavy drinking will not help their patients	x
		x		Providers are concerned they might offend patients by discussing drinking	
	Intention and motivation	x		Providers are reluctant to discuss drinking unless signs of risk are apparent	
		x		Providers consider that screening and giving advice for heavy drinking is not their responsibility	x
	Self-efficacy	x		Providers believe they cannot help their heavy drinking patients	x
	Learning style				
		x		Providers believe that patients are not interested in getting help regarding their alcohol use.	
		x		Providers feel that because of their own drinking habits they are not entitled to give advice	
	Emotions	x		Providers are anxious they will give wrong advice	
		x		Providers do not think it is their role to address patients' alcohol use	
		x		Providers are afraid they would stigmatize a patient by asking about his alcohol use	
		x		Providers are reluctant to screen for heavy drinking due to social and cultural barriers	x
	Nature of behaviour				
		x		Providers do not have enough time to screen and give advice for heavy drinking	x
	Capacity to plan change	x		Providers find it difficult to implement alcohol screening and brief intervention in normal flow of work	
	Self-monitoring or feedback				

Individual health professional factors

Professional behaviour

Table A1. Continued.

TICD framework - domains	TICD framework determinants	Selected based on literature review	Selected by the expert panel	Item description	Final chosen item
Patient factors	Patient needs				
	Patient beliefs and knowledge	x		Most heavy drinking patients think that their drinking is normal	x
	Patient preferences		x	Patients do not like to discuss their alcohol consumption	x
	Patient motivation				
Professional interactions	Patient behaviour	x		Patients would react in a negative way to the intervention	
	Communication and influence			There is poor communication among the providers around alcohol related care	
	Team processes		x	There is lack of support for doing alcohol screening and brief interventions from other members of the provider's team	
	Referral processes	x		There is nowhere to refer patients with alcohol problems	x
Incentives and resources	Availability of necessary resources	x		Instruments for screening and giving advice to heavy drinkers do not exist	x
			x	There is limited availability of treatment resources	
	Financial incentives and disincentives		x	There is lack of financial incentives for providers to carry out screening and advice for heavy drinkers	x
			x	There is lack of adequate financial support /incentives for the primary healthcare center managers to support the providers in carrying out alcohol screening and brief interventions	
	Nonfinancial incentives and disincentives		x	There is lack of non-financial incentives for providers to carry out screening and advice for heavy drinkers	x
			x	There is lack of adequate non-financial incentives for the primary healthcare center managers to support the providers in carrying out alcohol screening and brief interventions	
	Information system				
	Quality assurance and patient safety systems				
	Continuing education system				
	Assistance for clinicians		x	There is lack of ongoing support for providers to carry out screening and advice for heavy drinkers	x

Table A1. Continued.

TICD framework - domains	TICD framework determinants	Selected based on literature review	Selected by the expert panel	Item description	Final chosen item	
Capacity for organizational change	Mandate, authority and accountability for making necessary changes					
	Capable leadership		x	There is lack of leadership in primary health care centres to support and implement programmes of screening and advice for heavy drinkers	x	
	Relative strength of supporters and opponents		x	There are stakeholders (inside PHC) actively opposing implementation of alcohol screening and brief intervention in primary health care centers		
	Regulations, rules, policies		x	There exist organizational rules and policies that are hindering/ in contradiction with alcohol screening and brief intervention implementation in the PHC		
	Priority of necessary change					
	Monitoring and feedback					
	Assistance for organizational changes		x	There is lack of support in primary health care centres to help make the necessary organizational changes to implement screening and advice for heavy drinking	x	
	Economic constraints on the health care budget			x	There is lack of sufficient staff in primary health care centres to be able to implement programmes for screening and advice for heavy drinkers	x
	Contracts					
	Legislation			x	Laws and regulations in the country that influence the price and availability of alcohol are too lenient, <i>making the intervention less effective</i>	x
Social, political and legal factors	Payer or funder policies					
	Malpractice liability					
	Influential people		x	There are stakeholders (outside PHC) actively opposing implementation of alcohol screening and brief intervention in primary health care centers		
	Corruption					
	Political stability		x	There is lack of political stability on municipality / country level		



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## CHAPTER 3

# Protocol for a process evaluation of SCALA study – intervention targeting scaling up of primary health care-based prevention and management of heavy drinking and comorbid depression in Latin America

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## ABSTRACT

This paper describes the plan for a process evaluation of a quasi-experimental study testing the municipal level scale-up of primary health care-based measurement and brief advice programmes to reduce heavy drinking and comorbid depression in Colombia, Mexico, and Peru. The main aims of the evaluation are to assess the implementation of intervention components; mechanisms of impact that influenced the outcomes; and characteristics of the context that influenced implementation and outcomes. Based on this information, common drivers of successful outcomes will be identified. A range of data collection methods will be used: questionnaires; interviews; observations; logbooks; and document analysis. All participating providers will complete a pen-and-paper questionnaire at recruitment and two time points during the implementation period. Providers attending training will complete post-training questionnaires. Additionally, 1080 patients will be invited to self-complete a patient questionnaire. One-in-ten participating providers and fifteen other key stakeholders will participate in semi-structured interviews. Training sessions and community advisory board meetings will be observed by a neutral observer. Logbooks will be kept by local research teams to document events affecting the implementation. Project related documentation and other relevant reports describing the context will be examined.

## INTRODUCTION

In recent decades, growing recognition of the limits of the efficacy-based research paradigm has led to the development of new evaluation models, aiming to better explain the public health impact of health promotion interventions (Glasgow et al., 1999). This has resulted in a shift from asking *what works* to asking *what works for whom and in what circumstances* (Pawson & Tilley, 2004), as well as a shift from seeing an intervention as something that could universally either work or not, to an intervention as an event in a complex system, which cannot be decoupled from the context (Hawe, Shiell, & Riley, 2009; Moore et al., 2019). Additionally, an increased number of interventions proven to be effective in experimental setting, but not implemented in practice, have led to greater focus on implementation research, as the importance of bridging the knowledge-practice gap and addressing the issues of implementation and scale-up have become increasingly prioritized (Rapport et al., 2018; World Health Organization, 2016). The focus on implementation research is especially important in the often resource-constrained context of low- and middle-income countries (Theobald et al., 2018), where the lack of resources can require novel and innovative solutions to translate research results into routine practice (Yapa & Bärnighausen, 2018), based on local knowledge.

Built on the above-mentioned considerations, this paper describes development of process evaluation protocol for a quasi-experimental implementation study (SCALA) in a middle-income primary health care context. This includes presenting rationale for the process evaluation, the programme theory as well as development of data sources

and their application to the conceptual framework. The instruments developed and used for the presented evaluation are provided in supplementary material.

## The SCALA study

SCALA (Scale-up of Prevention and Management of Alcohol Use Disorders in Latin America, [www.scalaproject.eu](http://www.scalaproject.eu)) is a quasi-experimental study that aims to test the municipal level scale-up of primary health care-based measurement and brief advice programmes to reduce heavy drinking and comorbid depression in three middle-income Latin American countries; Colombia, Mexico and Peru. The SCALA study responds to the issue of low implementation of alcohol screening and brief advice in global health care practice despite evidence of its effectiveness in reducing alcohol consumption (Kaner et al., 2018; O'Donnell, Wallace, et al., 2014). Countries from Latin America are chosen as the focus for this study for several reasons. Alcohol is the fourth most important risk factor for morbidity and premature death in this region, compared to ninth globally (GBD 2016 Alcohol Collaborators, 2018). Additionally, the strong emphasis placed on strengthening primary health care as part of health systems reforms in the region (Atun et al., 2015; Kruk et al., 2010) makes the latter a suitable setting for introduction of preventive measures. Finally, although there is some research on the effectiveness of alcohol screening and brief advice in Latin American (middle-income) countries (Ronzani et al., 2019), most of the implementation research so far comes from high-income countries. In order to successfully scale up the intervention in low- and middle-income countries, it is important to study the factors influencing implementation directly in those contexts, as research from other fields (Bergström et al., 2015; Theobald et al., 2018) shows that those are likely to differ between high versus low- and middle-income contexts.

The primary outcome of the SCALA study is the proportion of the adult population registered with the Primary Health Care Centre (PHCC) that has their alcohol consumption measured by healthcare providers in the centre. The recruited PHCCs are allocated in one of four arms receiving different interventions: Arm 1 serves as control group, only receiving materials necessary for documenting their measurement practice, but not receiving any training or community support; Arm 2 receives a short clinical package and short training in absence of community support; Arm 3 receives a short clinical package and short training in presence of community support; and Arm 4 receives a standard (long) clinical package and standard training in presence of community support. The primary outcome is then compared between the four arms to examine three hypotheses: 1) that presence of community support leads to more sustainable coverage than its absence; 2) that training leads to higher coverage compared to no training; and 3) that in the presence of community support, the short clinical package and short training do not lead to less measurement coverage than the standard clinical package and standard training.



A detailed description of the municipal level interventions and overall study methodology is available in the main study protocol (Jane-Llopis et al., 2020). However, a short summary of the main implementation strategies and study arms is presented in Table 1 to aid understanding of the process evaluation protocol. The selected implementation strategies are based on strong evidence from previous research (Anderson et al., 2003, 2016; Heather, 2006) that stresses the importance of providing training, tailoring the materials and strategies to the local context, and the potential of supportive community and municipal environments to improve the outcomes.

**Table 1.** Overview of SCALA components and arms

SCALA component	Description	Arm 1	Arm 2	Arm 3	Arm 4
<i>Community support</i>	Community support consists of combinations of several activities: establishment of Community Advisory Boards (CABs) of local stakeholders, identification of a local project champion, implementation of locally chosen adoption mechanisms and support systems, as well as implementation and media campaign focusing on reframing heavy drinking as a problem that can be addressed through primary health care-based measurement and advice programmes. Only Arm 3 and 4 receive the community support.	/	/	Present community support	Present community support
<i>Clinical package</i>	The clinical package consists of a care pathway for measuring heavy drinking (using AUDIT-C) and comorbid depression (using PHQ2/9), a provider and patient booklets on alcohol and depression, as well as patient leaflets on alcohol and depression. The main difference between short (Arm 2 and 3) and standard (Arm 4) clinical package is the complexity of the care pathway, length of the provider booklet, and extent of alcohol advice. All elements of the clinical package are tailored to the local context with support from the community advisory board and patient and provider user panels.	/	Short clinical package	Short clinical package	Standard clinical package
<i>Training</i>	Training is developed based on previous screening and brief advice training protocols adapted to targeted context. Training sessions are aimed at the primary health care professionals and consist of didactic input, guided discussions, skills and practice modelled through videos and role playing delivered by members of research team, accredited teachers, addiction consultants or local primary health care professionals who receive full-day train-the-trainers session from a senior addiction and primary health care specialist trainer. The training sessions are followed up after three months by a booster session. The main difference between short (Arm 2 and 3) and long (Arm 4) training is in the extent and content of the training (as they are based on the differing clinical packages).	/	Short training	Short training	Standard training

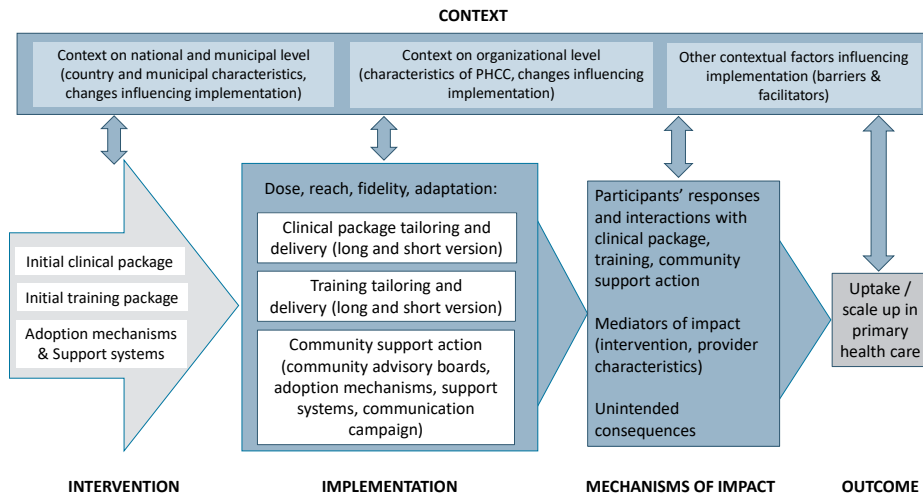
## Process evaluation of SCALA project

SCALA project takes place in real world as opposed to controlled laboratory setting, and is close to care delivery and actual decisions made about how care is delivered. This highly pragmatic nature of the study requires a thorough process evaluation to take into account the intervention complexity and varied settings in which the activities are being implemented. SCALA can be considered a complex intervention (Craig et al., 2008) because of: 1) involving large number of interacting components (clinical package involving range of educational materials, several training sessions, a combination of activities comprising the community support activities); 2) several groups of stakeholders taking part in the intervention (healthcare providers of various occupations, such as doctors, nurses, psychologists and social workers; PHCC leadership; members of Community Advisory Boards (CABs) coming from civil society, academia and government); and 3) possibility of tailoring and adaptation of the intervention components (materials and training) by the local teams in the three countries. Another important feature of SCALA is the variety of socio-political and organizational settings in which the intervention is taking place: 58 PHCCs, embedded in different municipalities, which are located in the three separate Latin America countries (Colombia, Mexico, Peru). As one of the aims of SCALA is to inform a future scale-up framework, a process evaluation can help to identify the implementation determinants that could help facilitate successful implementation across different settings, and also to distinguish between locally valid barriers and facilitators from the common drivers of successful implementation.

To guide the development of the process evaluation plan, the United Kingdom (UK) Medical Research Council's (MRC) process evaluation guidance (Moore et al., 2015) has been selected based on the considerations explained above. The MRC framework involves detailing the programme theory and emphasizes the relationships between implementation, mechanisms of impact, and context (G. F. Moore et al., 2015). Figure 1 describes the conceptual framework of the SCALA process evaluation based on the MRC guidance. Monitoring of what has been implemented (specifically reach, dose, fidelity and adaptation of the intervention) and how the implementation has been achieved, is important to assess the extent to which the intervention was delivered, and to determine whether the intervention was not effective due to lack of implementation. As noted earlier, SCALA emphasizes the potential for adaptation in context, and so capturing the balance between active ingredients being delivered with fidelity versus any adaptations made at local level will aid in establishing which core components should be included in the final scale-up framework. Assessing the mechanisms of impact will allow us to test causal mechanisms hypothesized to produce change, as well as to identify any unexpected mechanisms, taking into account suggestions based on the review of existing mechanism studies (Lewis et al., 2020) to precisely clarify the tested concepts, generate testable hypotheses and use behavioural indicators of proximal outcomes. Finally, whilst MRC framework defines context as "anything external to the intervention that may act as a barrier or facilitator to its implementation, or its effects" (Moore et al., 2015) for

the purpose of this process evaluation, we frame context also as the social, political and organizational setting in which the intervention is delivered and evaluated (based on Craig et al., 2008; Rychetnik, Frommer, Hawe, & Shiell, 2002), as we want to describe differences in pre-existing contexts of the countries, municipalities and PHCCs, as well as capturing any changes in these settings that occur during the implementation period.

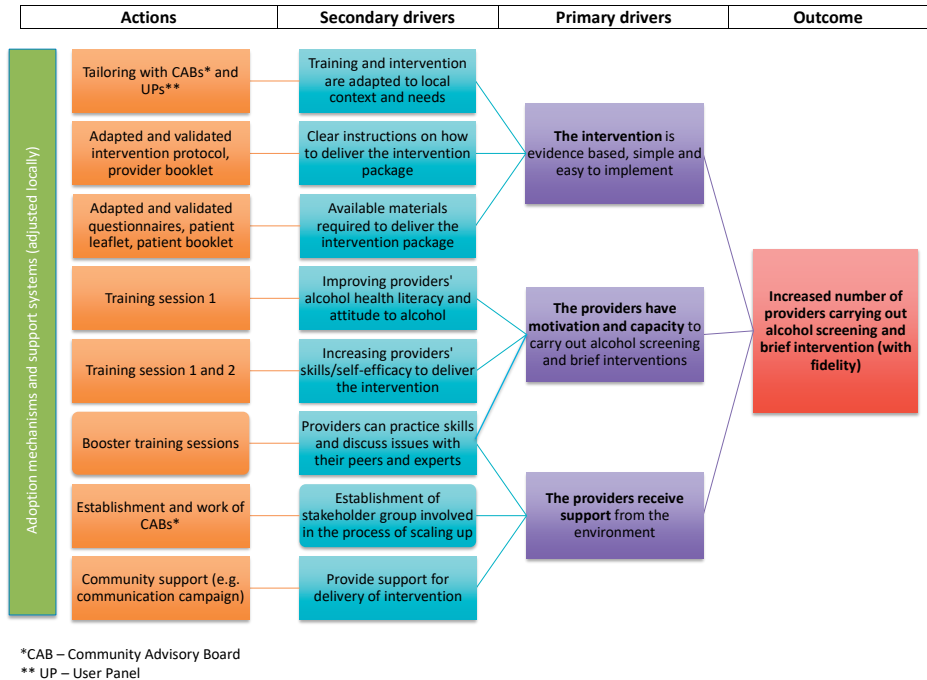
**Figure 1.** Conceptual framework for SCALA process evaluation



## Programme theory

In SCALA, a driver diagram is used to outline assumptions about how the actions may produce change. The driver diagram provides the theory of change (similar to logic models) by displaying the actions and drivers that are hypothesized to contribute to the aim of an intervention, and illustrating the possible relationships between primary drivers, secondary drivers, and the specific activities (in the case of SCALA, the latter refers to activities conducted as part of the implementation strategies) (Institute for Healthcare Improvement, n.d.). Each of the activities contributes to the outcome through hypothesized secondary and primary drivers. The drivers were determined based on existing considerations of commonly used social science theories and implementation frameworks, such as “Diffusion of Innovations” (E. Rogers, 2003), “Theory of planned behavior” (Ajzen, 2012), “Social cognitive theory” (Bandura, 1977, 2004) and the “Tailored Implementation of Chronic Diseases framework” (Flottorp et al., 2013). To avoid simple selection of “off the shelf” theories (Moore & Evans, 2017), this knowledge was then combined with previous empirical research findings, and experience of the study team, on which factors could drive successful outcomes in the specific field of alcohol screening and brief interventions. Figure 2 represents the general driver diagram, which will be revisited and adapted throughout the study based on the activities in the countries and discussions with local research teams. This will allow us also to determine which outcome drivers were common across the settings and which varied locally.

**Figure 2.** SCALA driver diagram



### Aim of the process evaluation

The main research questions for the process evaluation are thus:

- How were different components of the SCALA package (training tailoring and delivery, clinical package and delivery, community support action) implemented in terms of reach, dose and fidelity, and what adaptations were made during implementation?
- Which mechanisms of impact of different components of the SCALA package influenced the outcome of the intervention?
- Which characteristics of the context influenced implementation and/or the outcomes of the intervention?

These questions will be considered overall for all three countries, as well as per country where necessary, to identify common drivers to effective implementation as opposed to local differences. This process evaluation protocol is complementary to the main study protocol (Jane-Llopis et al., 2020) and describes the process evaluation that will be conducted as part of the SCALA project. While the process evaluation plan is briefly described in the main protocol paper, the decision to present it in a separate paper stems from the extensive data collection, complexity of the plan, and the multi-stage work at differing levels of systems and in three countries. Furthermore, whilst this article describes the original plan for the SCALA process evaluation developed in the initial

project phase, at the moment of finalization of the article for publication it emerged that COVID-19 will be a major factor disrupting the project. For this reason, this paper describes also how we incorporate changes occurring due to COVID-19 into the process evaluation plans.

## **METHODS**

### **Design**

The process evaluation will use a mixed-methods study design, combining qualitative and quantitative methods. Quantitative approaches will be used to monitor the implementation, as well as to identify and assess potential mediators and moderators related to the main SCALA outcome. Qualitative methods will allow us to further unpack processes' of implementation and change, and to explore participants' responses to the SCALA programme, enabling us to explain the outcomes and facilitate transferability of findings to other settings (O'Cathain, Thomas, Drabble, Rudolph, & Hewison, 2013).

### **Data sources and collection**

Five data sources will be used: questionnaires; key informant interviews; observations logbooks; and document analysis.

### **Questionnaires**

*Provider questionnaire:* all participating providers will complete a pen-and-paper questionnaire at recruitment, and at two time points during the 18-month implementation period (months three and 13), answering questions on their attitudes and experiences to working with patients with heavy drinking and comorbid depression. Providers will be assigned a provider ID in order to connect questionnaire answers across the time points while allowing for anonymization.

*Post training provider questionnaire:* after each of the training and booster sessions, attending providers will complete a short questionnaire on their experience of the training, measuring satisfaction with the components of the training, as well as their perceived utility.

*Patient questionnaire:* On two separate days, during months three and 13, following the consultation with the extended tally sheet, patients who are able to read and write will be invited to give consent to self-complete additional questions in the waiting room before leaving the PHCC, handing the completed questions to a researcher in attendance. No patient identifying information will be included in the patient questionnaires. For the purpose of the process evaluation, patients will answer questions on their experiences of the consultation. The aim is to reach 1080 patients that will complete a patient questionnaire.

## **Interviews**

*Provider interviews:* During the final month of the 18-month implementation period, a random sample of one in 10 primary health care providers in each of the intervention municipalities will be selected for interview. The sample will be stratified by screening activity: bottom quartile of providers in the municipality during the first year of the implementation period; and top quartile of providers in the municipality during the first year of the implementation period. Interviews will be undertaken by telephone and will last 15-20 minutes. A topic guide will be used to focus discussions, based on the relevant parts of MRC guidance, and covering providers' experience of implementing the clinical package in primary health care practice, and any barriers or facilitators they have encountered. In case of any other issues emerging during the interviews, these will be further pursued.

*Interviews with other key stakeholders:* A number of individual or group interviews will be undertaken throughout the implementation period with the local research teams and trainers (at least one team member and one trainer per country). At the end of implementation period, interviews will be conducted also with other key stakeholders (at least five participants per country). These will include: user panel members; CAB members (e.g. representatives from local government, Ministry of Health, civil society organizations and healthcare institutions); and any additional local stakeholders involved in the development and implementation of the SCALA project. The sample will be purposively selected by the local research teams in consultation with the evaluator, in order to reach stakeholders involved in all parts of SCALA, namely: clinical package adaptation; training implementation; and community support. Depending on the stakeholder and their involvement in the project, the topic guides of the interviews will be based on MRC guidance, and will cover topics such as: the adaptation of the protocol; the implementation of the training and community support activities; experience and interaction with SCALA; unintended consequences; and any additional contextual factors that may have influenced implementation and outcome. Any other issues emerging during the interviews will also be pursued. Data saturation will be judged based on pre-determined framework categories (based on MRC guidance) being adequately represented in the data (Saunders et al., 2018).

## **Observations**

The training sessions with the primary health care providers, and the meetings of the CABs, will be observed by a neutral observer to assess participant responsiveness, implementation and barriers. A structured observation questionnaire will be used for this purpose and the observers will be trained by the evaluator on application of the questionnaire through an online training session.

## **Document analysis**

Document analysis will be used to identify existing contextual and policy factors on both a national and municipal level. For policy analysis, key evidence will include documents

detailing alcohol policy-related strategies, action plans, legislation and evaluations, at both country and municipal level. The existing contextual and policy factors will be mapped onto the test of the scale-up of the SCALA package to describe and identify which factors on national and municipal level might influence going to full-scale beyond the tested scalable units. Additionally, the evaluator will also collect any project related documentation (project meeting minutes, memos, reports, materials produced) from the local research teams and the project leadership.

### **Logbooks**

Logbooks will be used to capture any key events that occur during implementation at the national, municipal and organizational level that could potentially affect SCALA implementation and outcomes. Local research partners will complete the logbooks based on field visits, conversations with PHCC liaisons and their own implementation work.

### **Use of data sources to answer process evaluation questions**

The data sources described above will be used to collect information needed to answer the main research questions, based on the conceptual framework. Table 2 provides an overview of how each data source will be used to collect information necessary for the process evaluation, which is described in more detail below. The overall timeline of the SCALA project is available in the main protocol (Jane-Llopis et al., 2020).

### **Implementation**

In order to assess the implementation of the training, community support and clinical package, observations, questionnaires, key informant interviews and documentary analysis (of logbooks and meeting minutes) will be used.

First, *evaluation of the training* will focus on the implementation process, reach, dose (delivered and received), fidelity and potential adaptations made within the training sessions. A training overview logbook will be completed by the country research partners, providing information on the delivered training sessions and characteristics of attending trainees, and enabling us to estimate reach (number and characteristics of providers trained), as well as dose delivered (how many training sessions were delivered) and dose received (whether the providers attended the training sessions they were eligible for). Training sessions will be observed by trained members of the three countries research teams using a structured observation questionnaire. Observation will focus on monitoring delivery of the active ingredients within the training sessions (videos and role plays) in order to assess fidelity. Additionally, observers will note characteristics of the setting and any interesting processes emerging during the training. After the training session, trainers will be asked to complete a self-assessment questionnaire, marking the extent of delivery of the active ingredients (thus triangulating information on fidelity), as well as any adaptations made within the session along with their justification, or difficulties they or the participants experienced. Additionally, after the conclusion of the training period, interviews will be conducted with local research teams and trainers

to further explore data captured via the logbooks, observations and self-assessment questionnaires, and to provide information on any barriers and facilitators to the training implementation.

Second, to support ongoing evaluation of the *community support implementation*, local research teams will provide information on regular basis (every three months during the implementation period) regarding what has been implemented for each of the support systems, adoption mechanisms and the communication campaign (establishing the dose delivered), using a structured report. These quantitative data will be complemented with regular follow-up qualitative interviews with local research teams conducted by the evaluator. Additionally, CAB meetings will be observed by trained observers from the local research team, using a structured observation questionnaire to note down processes during meetings. Lastly, to evaluate whether the providers noticed the support systems, adoption mechanisms and communication campaign elements in their surroundings, they will complete a set of questions in baseline, and in months three and 13, follow-up provider questionnaires, enabling us to estimate an index representing the overall dose received of the community support.

Third, *adaptation and tailoring of the clinical package* to the local context before the start of implementation will be assessed through interviews with local research teams and analysis of the existing documents (materials before and after tailoring developed by the project team, plus project reports), with focus to understand the tailoring process. Information collected through tally sheets will also allow assessment of number of patients reached, and fidelity of protocol implementation in practice (care pathway implementation as intended).

### **Mechanisms of impact**

Evaluation of mechanisms of impact will focus on: participant responses and interactions with the intervention (what did different stakeholders themselves think of SCALA and its components); the mediators of effects; and any unintended consequences of the implementation.



Table 2. Overview of research questions and methodology by domain

Research question	Research sub question	Data collection methods (what)	Data source (who)	Data collection (how)	Data collection (when)
<b>Domain 1: Implementation</b>					
What was delivered in terms of dose, reach, fidelity, adaptation and how was the delivery achieved?	What was implemented in terms of training?	Observation	Training session observers	Trained independent observers attend the training, complete the observation form and return it to the evaluator.	During training period
		Self-report forms	Trainers	After each training, the trainers complete the self-report form and return it to the evaluator.	During training period
		Key informant interview	Local research teams, trainers	Minimum two interviews per country (with at least one trainer and one training organizer) are conducted by the evaluator (online or in person, depending on possibilities).	After training period
		Document analysis	Local research teams	Local research partners share any training related documentation (such as training overview document, presence lists, meeting minutes) with the evaluators.	During and after training period
What was implemented in terms of community support?		Observation	CAB meeting observers	Trained independent observers attend the CAB meeting, complete the observation form and return it to the evaluator.	Through the project period
		Document analysis	Local research teams	Local research partners share any community support related documentation (such as meeting minutes, materials produced) with the evaluator.	Through the project period
		Key informant interview	Local research teams	Interview with at least one local research team member involved in community support development and implementation per country are conducted by the evaluator.	Every 3 months during implementation period
		Provider questionnaire	Providers	Providers complete pen-and-paper questionnaire (20 min) at their place of work. Questionnaires are collected by the local research teams, transferred to electronic form and shared with evaluators.	Baseline period, M3 and 13 of implementation period
What was implemented in terms of clinical package?		Tally sheets	Providers	Providers complete tally sheets while conducting alcohol screening and brief intervention, local research partners collect them from PHCCs, transfer them in electronic form and share them with the evaluator.	Throughout the implementation period on monthly basis
		Key informant interview	Local research teams	Interview with at least one local research team member per country are conducted by the evaluator (online or in person, depending on possibilities).	Twice a year throughout the project duration

Table 2. Continued.

Research question	Research sub question	Data collection methods (what)	Data source (who)	Data collection (how)	Data collection (when)
		Provider questionnaire	Providers	Providers complete pen-and-paper questionnaire (20 min) at their place of work in the allocated period within their own time. Questionnaires are collected by the local research teams, transferred to electronic form and shared with evaluators.	Baseline period, M3 and M13 of implementation period
		Provider interview	Providers	1-in-10 of the participating providers is randomly sampled and approached to participate in short (15-min) phone interview. Interviews are conducted by members of local research teams and their recordings are shared with the evaluators.	End (M16-M18) of implementation period
<b>Domain 2: Mechanisms of impact</b>					
How did participants interact with SCALA components?	How satisfied were participants with the training sessions?	Post-training questionnaire	Providers	Directly after the training session they just attended, participating providers complete pen-and-paper questionnaire (5-10 min). Questionnaires are collected by the local research teams, transferred to electronic form and shared with evaluators.	After training sessions
	How did the providers perceive effectiveness of the community support actions?	Provider questionnaire	Providers	Providers complete pen-and-paper questionnaire (20 min) at their place of work in the allocated period within their own time. Questionnaires are collected by the local research teams, transferred to electronic form and shared with evaluators.	M3 and M13 of implementation period
	What did the patients think of the received intervention?	Patient questionnaire	Patients	Patients complete questionnaire (15 min) in the waiting room of the PHCC after they have been recruited by their healthcare provider during the consultation. Patient completes the questionnaire and returns it to the local research team member who is present in the waiting room.	M3 and M13 of implementation period

Table 2. Continued.

Research question	Research sub question	Data collection methods (what)	Data source (who)	Data collection (how)	Data collection (when)
	How did the participating stakeholders perceive SCALA project as a whole?	Key informant interview	Key stakeholders on municipal level, local research teams	Local research partners will select between at least five participants from different stakeholder groups who have been involved in SCALA project to participate in the interviews. Interviews will be conducted by the evaluator (online or in person, depending on possibilities).	M16-M18 of implementation period
		Provider interview	Providers	1-in-10 of the participating providers is randomly sampled and approached to participate in short (15-min) phone interview. Interviews are conducted by members of local research teams and their recordings are shared with the evaluators.	End (M16-M18) of implementation period
What were the mediators of the outcome?	What were the individual level mediators of outcome (e.g. knowledge, attitudes, self-efficacy)?	Provider questionnaire	Providers	Providers complete pen-and-paper questionnaire (20 min) at their place of work in the allocated period within their own time. Questionnaires are collected by the local research teams, transferred to electronic form and shared with evaluators.	M3 and 13 of implementation period
	What were the intervention level mediators of outcome (e.g. complexity, relative advantage)?	Provider questionnaire	Providers	Providers complete pen-and-paper questionnaire (20 min) at their place of work in the allocated period within their own time. Questionnaires are collected by the local research teams, transferred to electronic form and shared with evaluators.	M3 and 13 of implementation period
Were there any unintended consequences?	Were there any unintended consequences of the project?	Key informant interview, document analysis	Providers, implementers, other involved stakeholders	Local research partners will select between at least five participants from different stakeholder groups who have been involved in SCALA project to participate in the interviews. Interviews will be conducted by the evaluator (online or in person, depending on possibilities).	M16-M18 of implementation period, throughout the project

Table 2. Continued.

Research question	Research sub question	Data collection methods (what)	Data source (who)	Data collection (how)	Data collection (when)
<b>Domain 3: Context</b>					
How did the setting and other non-intervention factors affect the implementation and outcomes of the intervention?	What is the context in which the intervention was implemented on national and municipal level and how did it change throughout the project period?	Document analysis Logbooks	Published reports and documents Local research teams	Desktop research will be conducted by the evaluator to obtain information on social and political context in the three countries. Local research teams complete logbooks to notify of any significant events on national and municipal level happening during the implementation period.	Throughout the project Every 4-6 weeks during the implementation period Twice a year throughout the project duration
	What is the context in which the intervention was implemented on organizational level and how did it change throughout the implementation period?	Logbooks Key informant interview	Local research teams, PHCC employees Local research teams	Local research teams complete logbooks based on the field visits in PHCC and conversations with contact persons to notify any significant events happening during the implementation period. Interview with at least one local research team member per country is be conducted by the evaluator (online or in person, depending on possibilities).	On bi-monthly basis during the implementation period Twice a year throughout the project duration
	Which were the contextual factors that influenced delivery of the training, community support action and clinical package (barriers and facilitators)	Key informant interview	Local research teams Providers Provider questionnaire	Local research teams Providers Providers complete pen-and-paper questionnaire (20 min) at their place of work in the allocated period within their own time. Questionnaires are collected by the local research teams, transferred to electronic form and shared with evaluators.	Interview with at least one local research team member per country is be conducted by the evaluator (online or in person, depending on possibilities).

First, information on responses to their participation in SCALA will be obtained from all groups of participating stakeholders. Post-training questionnaires will capture providers' views on the perceived utility and general satisfaction with the training. Provider perceptions of the community support and clinical package will be obtained in the main provider questionnaires. Furthermore, qualitative interviews with providers (one tenth of the whole sample, representing varying levels of alcohol screening rates, none-low-high) will be conducted at the end of the implementation period to obtain more in-depth insight of their experiences. Information on patient acceptability of the protocol will be obtained also from the patient questionnaires. Other key stakeholders (e.g. local research teams, CAB members, project champions, other involved participants) will be interviewed at different time points throughout the study in order to obtain insights in their perceptions on the SCALA project.

Second, variables hypothesized to be *mediators of the effect* will be measured in the provider questionnaire and used as predictors in analysing outcome. Individual level variables such as attitude, social support and self-efficacy will be included in mediation analyses to investigate whether they mediate the influence of training and community support on the main outcome, and perceived intervention characteristics (relative advantage, complexity, compatibility, trialability and observability) will be compared between providers familiar with the short versus the standard protocol. The hypothesized mechanisms have been operationalized based on the primary and secondary drivers in the driver diagram (intervention being simple and easy to implement; providers having capacity (skills and motivation) as well as environmental support to deliver the intervention).

Third, through analysis of meeting minutes and interviews with key stakeholders we will also capture information on whether there have been any unforeseen effects of the project that facilitated or hindered the implementation of the intervention, or whether the intervention worked by a mechanism not hypothesized in advance.

### **Context**

The context in which the intervention is embedded will be assessed on two different levels: 1) as the setting in which the intervention is implemented, on a national, municipal and PHCC level; and 2) as all the non-intervention related factors influencing delivery of SCALA components (training, community support and clinical package) and the outcome, as an (implementation) barrier or facilitator. At a national and municipal level, the context of the intervention will be assessed at the start of the implementation, and will also be monitored throughout the implementation period for any changes. The initial context assessment will be done through documentary analysis following the methodology of Ysa et al., 2014, describing state and policy factors at a national and municipal level using available data similar to that of the OECD Better Life Initiative (2011), Sustainable Governance Indicators (Bertelsmann Stiftung, 2019), World Values Survey data (Inglehart & Welzel, 2005), alcohol policy-related strategies, action plans,

legislation and evaluations, both on country and municipal level. Further contextual changes occurring throughout the implementation period will be tracked with logbooks completed by the local research teams every 4-6 weeks and complemented with interviews when necessary to clarify information provided by logbooks. On the PHCC level, the initial context will be described by the local research teams based on their observations and communications with the PHCC contact persons (usually administrative coordinators or healthcare providers themselves). Changes and events at the PHCCs will also be monitored throughout the implementation period with logbooks, based on the information provided during field visits to the local research teams. Additionally, to obtain providers' own perception of contextual factors in their own PHCC, a number of items on context assessment (Bergström et al., 2015) are included in the provider questionnaire, providing information in domains of Resources, Community engagement, Monitoring for action, Work culture and Leadership.

Finally, special attention will be directed towards identifying barriers and facilitators both to implementation of all SCALA implementation strategies, as well as to the final outcome (alcohol screening rates). A distinction will be made between the perceived and actual barriers and facilitators. We consider as perceived barriers and facilitators the ones expressed by the key stakeholders based on their subjective experiences and observations, and can be on intervention, provider, organizational, municipal or national level. Information on those will be collected through the logbooks described above, analysis of meeting minutes (meetings with different stakeholders conducted within countries, as well as project planning meetings of the consortium), interviews with key stakeholders (providers, local research partners) and to small extent quantitatively through the provider questionnaire.

The actual barriers and facilitators on the other hand, are the factors that can be shown (by quantitative means) to influence the outcome on provider level; in our case the level of implementation of the protocol in clinical practice. Our focus will be investigation of determinants on provider (psychological) and organizational level, as they are proximal enough to allow for quantitative analysis, but possible interaction with country will be taken into account.

### **Impact of COVID-19 on implementation, mechanisms of impact and context**

To capture the impact of COVID-19 on the SCALA project, the existing channels of data collection will be used to gather additional information on implementation, mechanisms of impact and context. This will be done in the following ways. One, overall changes to the implementation of activities will be tracked through regular interviews with the local research teams. Two, the qualitative data collection (interviews with providers and other stakeholders) will incorporate additional questions relating to the disruption caused by COVID-19, and how this influenced and interacted with the participant's response to SCALA (both clinical package implementation and project overall) and with their practice. Three, the organizational context logbooks will be revised in order to allow

for gathering information regarding changes on the organizational level of PHCCs, specifically exploring the disruption of workflow in the practice due to COVID-19, change in availability of resources and the transition from chronic disease prevention to infectious disease prevention and treatment activities.

### **Organization of data collection**

Working in a large international consortium requires clear and efficient procedures for the organization of data collection and transfer. While the core process evaluation team is responsible for the initial selection of methods, and the development of instruments and data collection plan, this will be done in close collaboration with the research partners from each of the countries in order to make the data collection as feasible and resource-efficient as possible. For data transfer and storage, the same data security protocol as for the outcome data will be used to transfer process evaluation data: specially, data will be transferred in encrypted packages created with the open access 7-zip software, using 256-bit 'Advanced Encryption Standard' (AES). All electronic data will be stored on encrypted hard drives by the process evaluation team. All analogue data sources will be kept by the local research teams, where the data will be kept and stored adhering to local regulations.

### **Data analysis and integration**

Process evaluation data will be first analysed separately from the outcome data and later integrated. Quantitative data will be analysed with SPSS 26. Descriptive statistics (M, SD, %) of the process evaluation data items will be computed and group comparisons based on country and occupation will be made. Quantitative data from provider and patient questionnaires will be used for both cross-sectional and longitudinal analyses, considering the nested nature of the data (providers nested within PHCCs and in different countries). Quantitative data from other sources (e.g. on training delivery, training fidelity and PHCC characteristics) will be integrated with the provider questionnaire data. Qualitative data, comprised from both primary data collected specifically for the purpose of process evaluation (interviews, logbooks, observation forms), as well as from other documents produced throughout the project (e.g meeting minutes, reports), will be analysed using Atlas.ti. Interviews will be audio-recorded, with consent, and transcribed verbatim. In the case of the provider interviews, anonymization will be ensured by using the existing provider code to assign quotes. In the case of interviews with other stakeholders, only country and professional role category will be used for quotations, and other demographic data (gender and age) will only be presented on an aggregated level. Qualitative data will be analysed thematically, using both deductive (related to the dimensions of analysis provided by our theoretical framework and MRC guidance) and inductive (unforeseen information emerging) approaches. Local research teams will be involved in the coding and analysis, as they have better insight into nuances of language and meaning expressed in qualitatively obtained information.

Integration of quantitative and qualitative process evaluation data will be done via a process of triangulation (as convergence of results from different methods) and with the purpose of complementarity (elaboration and clarification of the results obtained through one method with results from another) (Greene et al., 1989). At the analysis stage, a ‘mixed methods matrix’ will be used to integrate data at provider level, and at interpretation stage, a ‘triangulation protocol’ will be used to explore commonalities and differences between data obtained through different methods (O’Cathain, Murphy, & Nicholl, 2010). Finally, the quantitative process evaluation data (either directly collected or quantified) will be integrated with the quantitative outcome analyses to aid explanation of drivers of outcome.

## **Ethics**

The SCALA study, with included process evaluation, has been reviewed and approved by the research ethics board at the TU Dresden, Germany (registration number: ‘EK 90032018’). In addition, the study has been approved by the appropriate ethics boards in in Colombia, Mexico, and Peru.

## **DISCUSSION**

The SCALA study seeks to test the impact of locally-tailored, municipal level implementation strategies on real-world primary health care-based measurement and brief advice programmes to reduce heavy drinking and comorbid depression in Colombia, Mexico, and Peru. Given the complexity of the interventions, implementation strategies, and primary health care delivery context, this provides a unique opportunity to analyse the characteristics of the interventions, provider, organizational, and wider socio-political context, that appear to contribute to, or adversely affect, outcomes. In doing so, it is possible to explore the relationships between these characteristics, and to identify the factors which are common across different contexts and thus should be levered when looking to further scale-up comparable programmes in novel settings. To achieve this, we have designed a mixed-methods process evaluation, that seeks to capture factors potentially impacting both the implementation strategies, as well as the implementation of the clinical package in practice. Different settings within and between countries will be described and monitored throughout the project. Working in a middle-income country context adds an additional layer of complexity, as non-intervention and resource related issues, as well as frequent political changes, might be expected (Bulthuis et al., 2020). Finally, while the process evaluation plan has sought to capture any major contextual events potentially impacting the project implementation from the outset, we recognize that the impact of the current COVID-19 pandemic is likely to affect the SCALA project substantially. For this purpose, additional measures to capture the changes occurring due to COVID-19 are included in this protocol.



## Lessons learned

A number of considerations and challenges emerged during planning the evaluation that are worth sharing with other evaluators. One, we established a researcher collaboration structure that allows us to achieve balance between the need for independent evaluation with the need for good working relationships with key stakeholders in the project (Moore et al., 2015) by dividing responsibilities between core process evaluation team and local research teams. The core process evaluation team is responsible for planning and coordinating data collection and data analysis, while the local research teams, who are closely involved in project implementation on country level, provide feedback on data collection materials, organizing data collection, and reaching out to stakeholders. However, this structure requires also large degree of flexibility, close collaboration with, and frequent communication between the core process evaluation team and local research teams. As the physical distance (Europe and Latin America) does not allow for frequent in-person meetings, contact will take place on a regular basis via online video meetings and e-mail. Two, the fact that the local research teams and implementers are also data collectors could have the potential to affect the evaluation. This has been accounted for by planning triangulation of data where possible, and by establishing a working atmosphere of collaboration as opposed to control, i.e. communicating the importance of implementation monitoring for the purpose of *understanding* processes and barriers, rather than to control *whether* the project was implemented according to plan. Three, an obstacle to process evaluation data collection can be also that it represents an additional workload for the participating providers (e.g. interviews, questionnaires), who are already busy with their daily job and delivering the intervention. We tried to limit the burden by planning for flexibility of the evaluator in scheduling interviews, and providing a longer time-frame for completing questionnaires. Four, while the process evaluation and outcome evaluation teams will work separately, it is important that seamless integration is ensured. In our case, this will be achieved through regular communication with both the principal investigator and the outcome evaluation team. Finally, we want to share an example of importance of taking local realities into account and adapting the procedures to the needs of the setting, while also staying pragmatic in line with availability of the resources. The patient questionnaire was initially considered to be conducted as an interview either by the healthcare provider or researcher, but as that would be very time consuming (also given that primary focus of the project is on providers rather than patients), the project team decided that patients will be asked to self-complete the questionnaire. This raised the issue of how to tackle possible patient illiteracy. Based on the discussion with the local research teams on the extent of the issue, it emerged that we would have to spend a lot of time and human resources interviewing patients in order to capture the small possible number of patients who might not be able to read or write. Therefore we decided it would be a more pragmatic use of resources to have patients self-complete the questionnaire, but only during the allocated days, when one researcher could be present in the PHCC in case patients needed any help with completing the questionnaire.

## **Conclusion**

In this paper we provide detailed information on the protocol of process evaluation for a three-country quasi experimental implementation trial, which aims to improve delivery of interventions to reduce alcohol use disorders and comorbid depression in primary health care practice. The evaluation of implementation, mechanisms of impact, and context, will aid in the explanation of the outcome evaluation results and help identify factors important for further scale-up of the intervention in future.



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## CHAPTER 4

# Training primary health care providers in Colombia, Mexico and Peru to increase alcohol screening: mixed-methods process evaluation of implementation strategy

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## ABSTRACT

*Background:* Initial results from the SCALA study demonstrated that training primary health care providers is an effective implementation strategy to increase alcohol screening in Colombia, Mexico and Peru, but did not show evidence of superior performance for the standard compared to the shorter training arm. This paper elaborates on those outcomes by examining the relationship of training-related process evaluation indicators with the alcohol screening practice.

*Methods:* A mix of convergent and exploratory mixed-methods design was employed. Data sources included training documentation, post-training questionnaires, observation forms, self-report forms and interviews. Available quantitative data were compared on outcome measure – providers’ alcohol screening.

*Results:* Training reach was high: three hundred fifty-two providers (72.3% of all eligible) participated in one or more training or booster sessions. Country differences in session length reflected adaptation to previous topic knowledge and experience of the providers. Overall, 49% of attendees conducted alcohol screening in practice. A higher dose received was positively associated with screening, but there was no difference between standard and short training arms. Although the training sessions were well received by participants, satisfaction with training and perceived utility for practice were not associated with screening. Profession, but not age or gender, was associated with screening: in Colombia and Mexico, doctors and psychologists were more likely to screen (although the latter represented only a small proportion of the sample) and in Peru, only psychologists.

*Conclusions:* The SCALA training programme was well received by the participants and led to half of the participating providers conducting alcohol screening in their primary health care practice. The dose received and the professional role were the key factors associated with conducting the alcohol screening in practice.

## INTRODUCTION

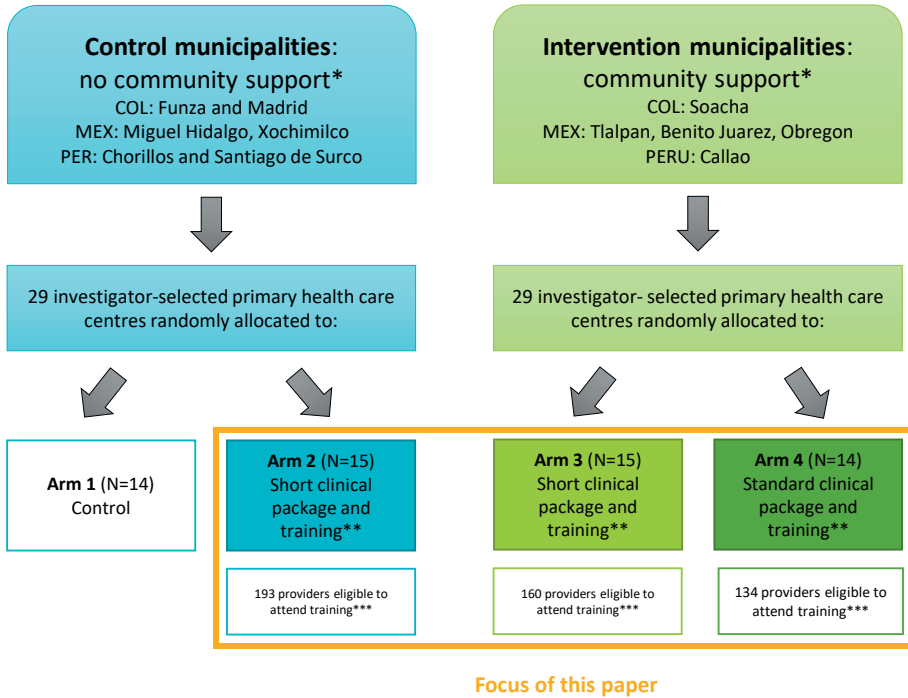
Primary health care (PHC) providers are a key group that can encourage adults to adopt a healthier lifestyle, as they have regular access to large portions of the population through routine consultations. One of the key components of a healthy lifestyle is reduction of alcohol use, alcohol being the ninth-largest risk factor for morbidity globally, and fourth in Latin America (Murray et al., 2020). Screening for patients’ risky alcohol use during a routine check-up in PHC and providing them with advice on cutting down if necessary has a large body of evidence supporting its effectiveness in the reduction of alcohol use (Kaner et al., 2018; O’Donnell, Anderson, et al., 2014). Despite its effectiveness and simplicity, it is often sub-optimally implemented in practice (O’Donnell, Wallace, et al., 2014) and a large body of research deals with how to improve the implementation to achieve better public health outcomes (Anderson et al., 2016; Heather, 2006; Keurhorst, Heinen, et al., 2016).

An implementation strategy consistently shown to be effective in improving the implementation of healthcare interventions in general (Rowe et al., 2018), and alcohol screening in particular (Anderson et al., 2014) is training of the PHC providers. Conversely, lack of appropriate training has emerged as a major barrier to practice; in a recent systematic review of factors influencing PHC providers' implementation of alcohol screening and brief intervention in primary care practices, lack of training was the most commonly emerging theme among the cited barriers, closely followed by the alcohol-related knowledge and the belief in one's own ability to deliver the intervention - both of which can be also targeted via training (Rosário et al., 2021). However, the majority of the existing alcohol screening research (both in general and training-specific) comes from high-income countries (Rosário et al., 2021). While alcohol screening programmes have been implemented and evaluated in Latin America (Ronzani et al., 2019; Shannon et al., 2021), evaluation of providers' training research remains scarce (e.g. Furtado et al., 2008). Training evaluation in other healthcare-related fields focuses on effectiveness rather than the implementation (Smith et al., 2020; Spagnolo et al., 2020; Stokholm Bækgaard et al., 2021; Stoltenberg et al., 2020; Suriyawongpaisal et al., 2020). This paper addresses this gap in the literature and presents the findings of an in-depth process evaluation of using a training package as an implementation strategy to increase alcohol screening by the PHC providers in a middle-income context.

SCALA (Scale-up of Prevention and Management of Alcohol Use Disorders in Latin America) is a quasi-experimental study conducted in three middle-income Latin American countries (Colombia, Mexico and Peru), testing whether training PHC providers and providing community support (a range of adoption mechanisms and support systems) could support improved implementation of PHC-based screening, advice and treatment for heavy drinking and comorbid depression (Jane-Llopis et al., 2020). In addition to screening for risky alcohol consumption of all patients, and providing advice on cutting down if necessary, SCALA clinical care pathway requires providers to check for depressive symptoms in the heavy drinking patients, as heavy drinking is often comorbid with depression (Bellos et al., 2016), and associated with worsening of depression, including increased suicide risk and impaired social functioning (Boden & Fergusson, 2011). A summary of the study design and the included intervention components by arm is presented in Figure 1, and further detailed description is available in the protocol paper (Jane-Llopis et al., 2020).

The results of the outcome evaluation at the primary health care centre (PHCC) level have been published elsewhere and the findings suggest that the providers' training significantly increased the proportion of alcohol screening in adult patients (although the standard training and clinical package was not superior to shorter version) (Anderson et al., 2021), as well as the depression screening rates (O'Donnell et al., 2021). At the time of evaluation, community support (as described in Figure 1), was not found to have a significant impact (Anderson et al., 2021), which was likely due to its incomplete implementation, as the implementation had to be put on hold due to COVID-19 restrictions.

Figure 1. SCALA study design



\* Community support was designed to consist of: 1) establishment of **Community Advisory Boards (CABs)** of local stakeholders, 2) identification of **project champion(s)**, 3) implementation of locally chosen **adoption mechanisms** and **support systems**, and 4) implementation of **communication campaign** focusing on reframing heavy drinking as a problem that can be addressed through primary health care-based alcohol screening and brief intervention programmes. When the data collection was put on hold due to COVID-19 pandemic, not all aspects of municipal support were fully implemented yet. \*\* Detailed description of the training is available in Figure 2. \*\*\* Whether a provider was eligible for participation at the training was determined based on the planned implementation by arm (arm 2 and 3 one training and one booster session, Arm 4, two trainings and one booster session) and actual implementation of the training session (Colombia only had one training and one booster session in Arm 4 planned, in Mexico and Peru not all planned booster sessions were carried out). Additionally, dropout date and joining date of new providers were considered, so that providers who dropped out of the study before the first training in their arm took place, and providers who joined the study after the training in their centre was completed were not considered eligible).

In this paper, we present the findings from the process evaluation of SCALA training as the implementation strategy already demonstrated to be effective to increase alcohol screening (Anderson et al., 2021). We used the UK Medical Research Council (MRC)'s process evaluation guidance (Moore et al., 2014, 2015) to develop the process evaluation protocol (Jane-Llopis et al., 2020) and guide the aims, focusing on the key issues regarding implementation, mechanisms of impact, and context along with their relationship to the outcome. The main research questions addressed in this paper include:

- What was implemented in terms of training dose, reach, adaptation and fidelity?
- How did the participants respond to the training, and were there any unintended consequences of the training implementation?
- How were the implementation factors, participant response and provider demographics associated with the main study outcome (alcohol screening in practice)?

## METHODS

### Design and setting of the study

We used the StaRI checklist (Pinnock et al., 2017) to report on the study. The presented data have been collected as part of the broader process evaluation (Jane-Llopis et al., 2020) to support an in-depth understanding of study's primary results (Anderson et al., 2021). We employed mixture of the convergent and exploratory mixed-methods design (Creswell & Plano Clark, 2011), whereby the qualitative and quantitative data were collected in the same period, analysed separately, but then complemented with additional qualitative data and interpreted together. Some relevant characteristics of the implementation setting are presented in Table 1.

### SCALA training curriculum

Figure 2 describes the SCALA training curriculum. Two versions of the training package were developed, a short and standard version, to be tested in different arms. Both were designed to be flexible and easy to adapt to the country and local context. The training package consisted of four products: the training manual; the training course presentations; the training videos, and the Train New Trainers sessions. The key differences between the short and standard training package were different care pathways (short vs. standard, as described in the study protocol (Jane-Llopis et al., 2020)), and a different set of videos. Both training sessions focused on alcohol screening and advice, and the standard training additionally emphasized dealing with co-morbid depressive symptoms, and alcohol referral and treatment options. The core of the training sessions was based on two main components: videos showing PHC providers delivering the protocol in practice and role-plays using the developed materials. The theoretical background for this approach comes from social cognitive theory (Bandura, 1977), where both vicarious learning (through modelling) and enactive mastery (practicing the skills yourself) are key components of increasing self-efficacy. In practice, this approach has been used in previous similar projects (e.g. ODHIN, PHEPA) with demonstrated effectiveness (Anderson et al., 2016).



**Table 1.** Description of the setting characteristics in Colombia, Mexico and Peru

	Colombia	Mexico	Peru
<b>Setting description</b>			
<i>Main country demographics</i>	<ul style="list-style-type: none"> <li>Population: 48 258 494 (2018 data)</li> <li>51.2% female</li> <li>75.5% living in urban areas</li> <li>Age distribution: 24.0% under 15, 67% 15-64, 8.8% 65+<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>Population 119 938 473 (2015 data)</li> <li>51.4% female</li> <li>76.8% living in urban areas</li> <li>Age distribution (2010 data): 29.3% under 15, 64.4% 15-64, 6.3% 65+<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>Population 31 237 385 (2017 data)</li> <li>50.5% female</li> <li>81.9% living in urban areas</li> <li>Age distribution: 26.5% under 15, 65.3% 15-64, 8.2% 65+<sup>3</sup></li> </ul>
<i>GDP per capita (2019)<sup>4</sup></i>	6508.1 USD	10118.2 USD	7046.8 USD
<i>Income level (World bank)<sup>5</sup></i>	Upper-middle income	Upper-middle income	Upper-middle income
<i>Participating municipalities</i>	<p><b>Intervention</b> (Arm 3 and 4): Soacha (population: 93.154; located in the metropolitan area of Bogota, part of the department of Cundinamarca).<sup>1</sup></p> <p><b>Control</b> (Arm 1 and 2): Funza (pop: 112.254), Madrid (93.154); both located in Western Savanna Province and part of the department of Cundinamarca, 25 km outside Bogota.<sup>1</sup></p>	<p><b>Intervention:</b> Tlalpan (650.567)*, Benito Juárez (385.439), Álvaro Obregón (727.034); all one of 16 municipalities of Mexico City.<sup>2</sup></p> <p><b>Control:</b> Miguel Hidalgo (372.889), Xochimilco (415.007), both one of 16 municipalities of Mexico City.<sup>2</sup></p> <p>*two of PHCUs from this municipality are in the control arm</p>	<p><b>Intervention:</b> Callao (pop: 451.260): Provincial capital and one of the seven districts in Callao province, part of Callao region. Located in the West area of Lima, and borders the Pacific Ocean.<sup>3</sup></p> <p><b>Control:</b> Chorillos (314.241) and Santiago de Surco (329.152); both one of the 43 districts of Lima province, located in the Lima region, bordering each other.<sup>3</sup></p>
<i>Existing alcohol SBI practice and guidelines</i>	The alcohol SBI recommendations are included as part of clinical practice guidelines that focus on detection and treatment of alcohol abuse and dependence on primary, secondary and tertiary care level <sup>6</sup> but there are no official standards. Some of the providers are familiar with the screening instruments.	Official standards establish the obligatory procedures and criteria for mandatory prevention, treatment and control of addictions, which include asking questions on alcohol use <sup>7</sup> and including this information in the patient's history <sup>8</sup> specifically in primary health care context.	No explicit guidelines, recommendation for providers to include alcohol screening is implicitly included in general recommendation to perform mental health related screening (alcohol use disorder being considered as one of subcategories) <sup>9</sup>
<i>Organizational context in the participating PHCCs<sup>10</sup></i>	In the intervention arm, the leadership was very supportive of the project, and there was leadership directive for providers' participation and assigned time to attend the trainings.	The organizational context depended on the centres, with varying levels of leadership support.  In all of the participating centres there was existing screening practice due to standards described above, and providers were familiar with the screening instruments and often also have experience with its application.	There was no consistent leadership directive in the centres.  None of the participating centres had an existing screening practice and providers were generally not familiar with screening instruments.

Table 1. Continued.

	Colombia	Mexico	Peru
<b>Setting description</b>			
<i>Provider recruitment details</i>	In all arms, the providers were chosen for participation by their superiors.	The recruitment varied by centre, with some providers being selected for participation and some providers volunteering to participate.	The providers had to volunteer to join the project.

<sup>1</sup> DANE (2018). Censo nacional de población y vivienda. Proyecciones de población. Available from: <https://www.dane.gov.co/index.php/estadisticas-por-tema/demografia-y-poblacion/proyecciones-de-poblacion> [accessed 23.9.2020]. <sup>2</sup> INEGI (n.d.). Banco de indicadores, 2015. Available from <https://www.inegi.org.mx/app/indicadores/?t=0070&ag=09014##D00700060> [accessed 23.9.2020] <sup>3</sup> INEI (2017). Censos nacionales 2017: XII Censo de Población, VII de Vivienda y III de Comunidades Indígenas. Sistema de Consulta de Base de Datos. Available from: <http://censos2017.inei.gob.pe/redatam/> [accessed 23.9.2020] (data from 2017). <sup>4</sup> IMF (2019). World Economic Outlook: <https://www.imf.org/en/Publications/SPROLLS/world-economic-outlook-databases>. <sup>5</sup> World bank (n.d). World Bank Country and lending groups: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519>. <sup>6</sup> Ministerio de Salud y Protección Social. Guía de práctica clínica para la detección temprana, diagnóstico y tratamiento de la fase aguda de intoxicación de pacientes con abuso o dependencia del alcohol - 2013 Guía No. 23 [Internet]. 2013. Available from: [https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/INEC/IETS/GPC\\_Completa\\_OH.pdf](https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/INEC/IETS/GPC_Completa_OH.pdf). <sup>7</sup> Norma Oficial Mexicana NOM-028-SSA2-2009 para la prevención, tratamiento y control de las adicciones [Internet]. 2009. Available from: [http://www.conadic.salud.gob.mx/pdfs/norma\\_oficial\\_nom.pdf](http://www.conadic.salud.gob.mx/pdfs/norma_oficial_nom.pdf). <sup>8</sup> Norma Oficial Mexicana NOM-004-SSA3-2012 del expediente clínico [Internet]. 2012. Available from: <https://www.cndh.org.mx/DocTR/2016/JUR/A70/01/JUR-20170331-NOR26.pdf>. <sup>9</sup> Ministerio de Salud Perú. Plan nacional de fortalecimiento de servicios de salud mental comunitaria 2018-2021 [Internet]. 2018. Available from: <http://bvs.minsa.gob.pe/local/MINSA/4422.pdf>. <sup>10</sup> Information provided by local research partners based on field visits.

Before training implementation, Train New Trainers course took place in Bogota, Colombia in May 2018, attended by the local professionals (doctors, psychologists, addiction specialists) from the three countries (future trainers, N=16). The training was conducted by an addiction specialist with several years of experience in implementing brief interventions and training delivery. A detailed description of the full training package and the process of its development is available in Appendix 1, along with the links to all the training materials (SCALA, 2021).

## Participants

PHC providers of any professional role from the participating centres were eligible for participation in the SCALA study upon signing informed consent. Information on provider recruitment is described in Table 1. In this paper, we included the providers from 44 PHCCs in Arms 2, 3 and 4 who were eligible to be trained either in the baseline period, or through booster sessions taking place in the first five months of the implementation period of the study. Some centres were in their 6<sup>th</sup> or 7<sup>th</sup> month of implementation when data collection was halted due to the start of the COVID-19 pandemic and were still recruiting new providers at that point, but we used the 5-month mark to allow for better alignment with the data presented in the main outcome paper (Anderson et al., 2021). Providers from the 14 PHCCs in Arm 1 (control group) who did not receive training, as well as providers who attended the training without signing the informed consent to participate in the study, were not included in the data collection and analysis.

**Figure 2.** SCALA training curriculum

	Short training (Arm 2 and 3)	Standard training (Arm 4)
	Suggested training length:  1 x 2h training session (T1) 1 x 1h booster session (B1)	Suggested training length:  2 x 2h training sessions (T1 and T2)- 4h total 2 x 1hour (or 1x2 hours) booster sessions (B1)
<b>T1 (all arms)</b>		
<b>Unit 1:</b> General concepts + Attitudes to alcohol (30 min)	<ul style="list-style-type: none"> <li>Welcome and warmup</li> <li>Quiz on the impact of alcohol use</li> <li>Discussion on attitudes toward alcohol use</li> </ul>	
<b>Unit 2:</b> Screening for alcohol problems and comorbid depression (50 min)	<ul style="list-style-type: none"> <li>Explanation of SCALA screening criteria and care pathway</li> <li>Presentation of AUDIT-C and PHQ-2 as screening instruments</li> <li>Showing two videos on screening</li> <li>Role-playing in pairs with predefined patient roles</li> </ul>	
<b>Unit 3:</b> Brief intervention on alcohol (45 min)	<ul style="list-style-type: none"> <li>Presentation of brief intervention steps and core skills needed</li> <li>Showing video on brief intervention</li> <li>Role-playing in pairs with predefined patient roles</li> </ul>	
		<b>T2 (Arm 4 only)</b>
<b>Unit 4:</b> Recap + Advice/information for co-morbid depressive symptoms (40 min)		<ul style="list-style-type: none"> <li>Presentation of strategy for co-morbid depressive symptoms</li> <li>Showing video on dealing with co-morbid depressive symptoms</li> <li>Role-playing in pairs with predefined patient roles</li> </ul>
<b>Unit 5:</b> Referrals for alcohol and depression (40 min)		<ul style="list-style-type: none"> <li>Summary presentation of services for alcohol and depressive symptoms (tailored to the local context), followed by discussion.</li> <li>Show video on referral</li> <li>Role-playing in pairs with predefined patient roles</li> </ul>
<b>Unit 6:</b> Treatment when the referral is not possible + wrap up (30 min)		<ul style="list-style-type: none"> <li>Presentation on options for professionals when referral services are not available or patients are not willing</li> </ul>
<b>B1 (all arms)</b>		
<b>Booster session (60 min)</b>	<ul style="list-style-type: none"> <li>Summary of key concepts and care pathway process</li> <li>Troubleshooting based on providers' experience</li> </ul>	

## Measurements

The selection of constructs to inform the training process evaluation was based on the UK MRC process evaluation guidance (Moore et al., 2015). Table 2 presents an overview of the key measured constructs, the data sources used for their assessment, and information on data integration. We included also an outcome indicator – using SCALA clinical package in practice at least once. As the SCALA care pathway was designed for the providers to screen for alcohol consumption first and only use depression screening

if the patient was identified as drinking at a risky level, alcohol screening was used as a proxy measure to indicate the use of the SCALA clinical package.

## **Data sources and collection**

Details on the data sources are presented below along with data collection procedure description.

### **Training documentation**

Training logbooks were completed by the local research partners throughout the implementation period and contained information on the delivered training (date, time and training location) and participating providers (based on the information from the signed attendance lists). This allowed us to assess the dose and reach of the training; the latter also in combination with demographic data gathered during study recruitment.

### **Post-training questionnaire**

The questionnaire assessed participant response to the training. Participants answered a set of questions on a 5-point Likert scale (1-Very negative to 5-very positive for satisfaction and 1-Not very useful to 5-Very useful for perceived utility) and additionally had space to provide open-ended answers. Providers completed the pen-and-paper questionnaires at the end of the training session in the period between August 2019 and March 2020. Questionnaires contained the predetermined provider ID to guarantee anonymity and individual traceability.

### **Observations**

The training sessions were observed by previously trained local research team members. In Colombia and Peru, all the sessions were observed. In Mexico, one session per arm was observed due to resource limitations. Researchers used a structured observation form containing both quantitative indicators (e.g. checklists to mark the delivery of listed active ingredients to assess fidelity), and there was room for qualitative observations (e.g. providing an additional explanation in case of non- or partial execution of activity).

### **Self-report forms**

The trainers completed the self-report form after each delivered training, providing information on which components were delivered and whether they adapted the training, along with explanations. Fidelity and adaptation questions in the observation and self-reports form were the same to allow for data triangulation.

### **Interviews**

The interview topic guide was tailored to the country to complement the information obtained from other sources based on previous familiarization with data from other sources by the interviewer. The interviews were conducted after data from other sources (both qualitative and quantitative) was already partially analysed.

**Table 2.** Key measured constructs for the process evaluation of the training

<b>Construct measured</b>	<b>Definition (MRC)<sup>a</sup></b>	<b>Operationalization</b>	<b>Data source used</b>	<b>Data integration</b>
<i>Implementation</i>				
Dose	Quantity of what has been delivered in practice (how much intervention is delivered)	Actual amount and length of the training per country and arm (dose delivered) Number of hours and sessions provider participated in the training, per country and arm (dose received)	Training documentation, attendance lists	Quantitative data only, information on dose delivered combined with individual attendance information to calculate dose received
Reach	The extent to which the target audience comes into contact with the intervention	Number and % of all providers recruited for the study and eligible for the training that participated in the trainings <sup>b</sup> calculated for each training session separately and overall, per country and per arm, Representativeness of the reached population assessed through a comparison of demographic characteristics (age, gender, professional role) between the reached population and non-reached population.	Training documentation, consent form information	Quantitative data on reach complemented with qualitative on reasons for provider non-participation (as obtained through interviews)
Adaptation	Alterations made to intervention to better fit the context	Description of parts of the training that were adapted	Observation forms, trainer self-report forms	Results triangulated from both data sources and complemented with qualitative data on reasons for changes
Fidelity	Quality of what is delivered or consistency of what is implemented with the planned interventions	Delivery of training's active ingredients (videos and role-plays): complete, partial or none.	Observation forms, trainer self-report forms	Results triangulated from both data sources and complemented with qualitative data on reasons for changes
<i>Mechanisms of impact</i>				
Participant response	How do participants interact with the intervention	Satisfaction with the training Perceived utility of the training Suggestions for improvement	Post-training questionnaire, interviews	Quantitative data complemented with qualitative data on provider's impressions and suggestions for improvements and qualitative data from trainer interviews
Unintended consequences	Unanticipated pathways and consequences	Emerging side-effects of delivering trainings in the PHCC	Interviews	Qualitative data only

Table 2. Continued.

Construct measured	Definition (MRC) <sup>a</sup>	Operationalization	Data source used	Data integration
<i>Context</i>				
Demographics	Factors external to the intervention which impede or strengthen its implementation or effects	Country, age, gender, professional role of providers	Consent forms	Quantitative data only
<i>Outcome</i>				
Outcome behaviour		Participating providers conducting alcohol screening in practice at least once	Tally sheets	Quantitative data only, integrated with dose, participant response and demographic information

<sup>a</sup>In this paper, term intervention (as used in the MRC definition) refers to the training package. <sup>b</sup> Whether a provider was eligible for participation at the training was determined based on the planned implementation by arm (arm 2 and 3 one training and one booster session, Arm 4, two trainings and one booster session) and actual implementation of the training session (Colombia only had one training and one booster session in Arm 4 planned, in Mexico and Peru not all planned booster sessions were carried out). Additionally, dropout date and joining date of new providers were considered, so that providers who dropped out of the study before the first training in their arm took place, and providers who joined the study after the training in their centre was completed were not considered eligible)

The initial interview guides were developed as part of process evaluation protocol development, and were adapted to reflect any additional issues that emerged during the data familiarization and preliminary analysis phase. In total, three group interviews (one per country) were conducted with a total of nine participants (two in Colombia, two in Peru and five in Mexico). All participants were either trainers (N=7) or training organizers (N=2) in their countries.

### **Tally sheets (as outcome data)**

During the implementation period, providers completed a tally sheet each time they conducted a screening. Those were collected from the PHCCs on monthly basis by the local researchers. The majority of the data was collected between August 2019 and March 2020, with exception of the interviews, conducted between November and December 2020. The first part of the data was collected by the local research teams (one in each of the countries), and all the evaluation materials were transferred electronically to the evaluation coordinator using 256-bit 'Advanced Encryption Standard' (AES). The online interviews were conducted by the process evaluation leader, audio-recorded with the consent of all participants, transcribed in Spanish and translated to English. All recordings were destroyed after transcription.

### **Data analysis**

Quantitative data were analysed with SPSS 25 (IBM Corp., 2017). Frequencies and descriptive statistics (mean, standard deviation) were calculated and group comparisons were made using Mann-Whitney U and Chi-square tests - overall, and by country or arm

where applicable. Qualitative data was analysed based on a combination of inductive and deductive coding using Atlas.ti 8.4 (Scientific Software Development GmbH, 2019). The main framework for deductive coding of qualitative parts of post-training questionnaires, observation forms and self-report forms were the categories based on the MRC guide as presented in Table 3, and within those categories, themes were coded inductively. Any discrepancies between information in observation and self-report forms were resolved through discussion with the local research teams. To code the interviews, independent double coding was conducted based on the framework by two researchers (DK and AS), PhD candidates with a background in health promotion/health communication and implementation science, followed by a coding comparison and summary of the main emerging themes. The lead author integrated the quantitative and qualitative data by the framework category with the purpose of complementarity (elaboration and clarification of the results obtained through one method with results from another) (Greene et al., 1989). Table 2 gives a more detailed indication on how the data were integrated at the point of analysis.

## **Ethics**

The study has been reviewed and approved by the research ethics board at the TU Dresden, Germany (registration number: 'EK 90032018'), and by the ethics boards in Colombia, Mexico, and Peru. All participating providers signed informed consent upon study recruitment.

## **RESULTS**

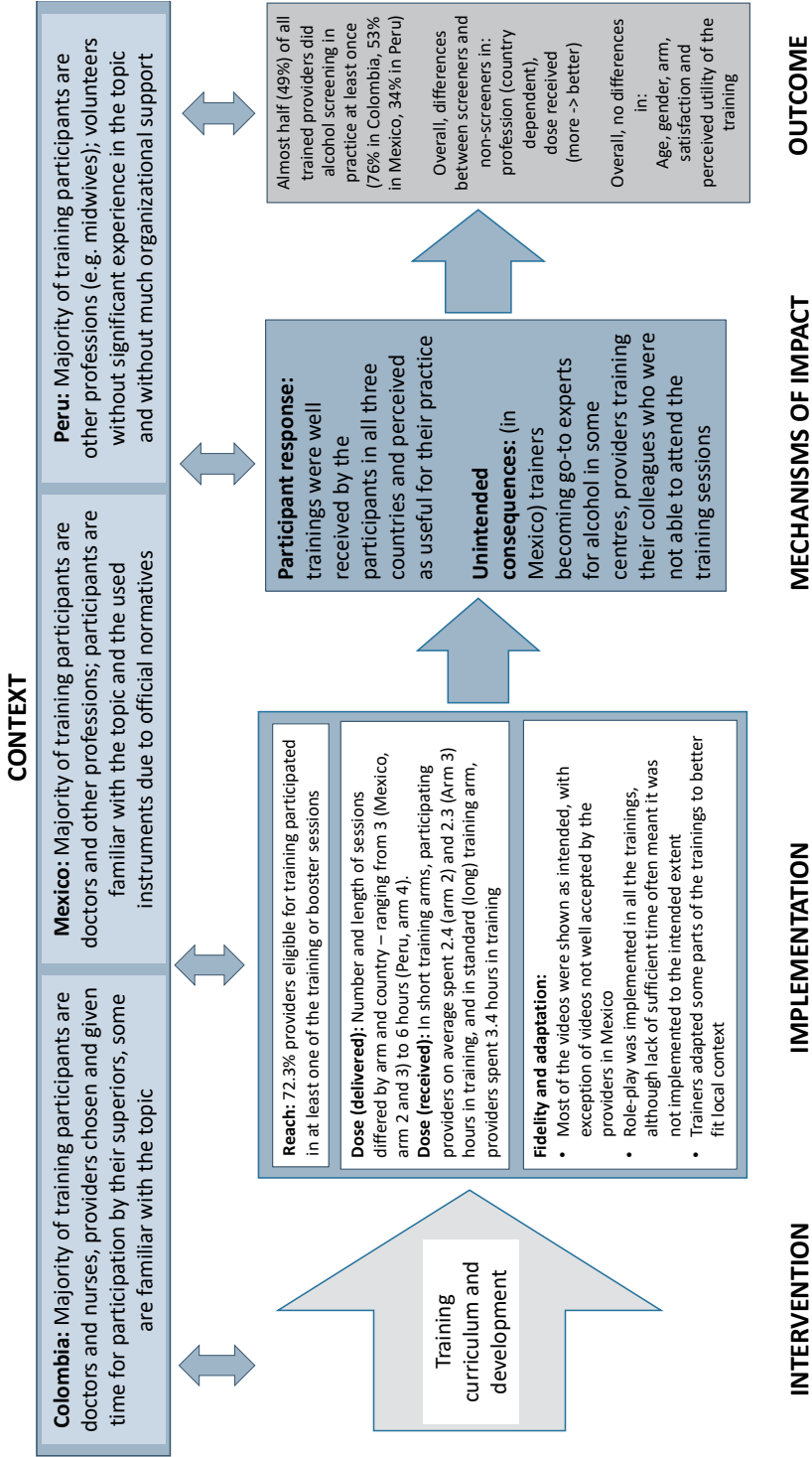
The results of the key process indicators and their relationship with the outcome are presented below. Due to the large amount of collected and analysed data, only the key tables are included in the results section, remaining tables are available as supplementary material (Appendix 2). A summary of the key findings is presented in Figure 3.

The training sessions took place between August and November 2019, and booster sessions took place between January and March 2020. In total, 45 training sessions and 30 booster sessions were delivered by twelve trainers (three from Colombia, five from Mexico, and four from Peru). Most of the activities were carried out before the restrictions due to the COVID-19 pandemic (Table 3).

## **Reach and dose**

First, we calculated reach (how many providers attended the training), dose delivered (how much training was offered) and dose received (how much training the providers attended) based on the information from the training documentation and attendance lists.

Figure 3. Summary of key findings of SCALA training process evaluation





A summary of the main reach and dose indicators is presented in Table 3, with complete information on reach and dose by country and arm available in Appendix 2, Table S2. Overall, almost three quarters (72.3%) of all eligible providers attended at least one of the delivered training sessions, with the highest percentage in Arm 4 (76.9%), followed by Arm 2 (74.1%) and Arm 3 (66.3%). In Arm 2 and 3, providers in all three countries had the opportunity to attend two sessions (one main and one booster), and in Arm 4, three sessions (with exception of Colombia, where two sessions were provided). Length of sessions differed by arm and country, ranging from three (Mexico, arms 2 and 3) to six hours (Peru, arm 4). The average number of hours attended across countries was highest in standard training in Arm 4 (3.4), and was comparable between short training arms (Arm 2 and 3); 2.4 and 2.3 hours respectively. On average across arms, providers in Colombia spent 2.7 hours in training, in Mexico 2.2 hours and in Peru, 3.1 hours.

As part of the interviews, we asked the local training teams about what they perceived as reasons for some providers not attending the training. Respondents indicated that lack of attendance did not always mean a lack of interest in the project; alternative reasons for non-attendance included conflicting work obligations, or not being present at work on that day (e.g. some providers only worked weekends). Additionally, in Peru, there was a three-month gap between recruitment and training, so a possible reason suggested by the trainers was that some providers forgot they registered. All providers who were allocated to training arms in SCALA were sent training presentation slides and materials however, and in Mexico, some received additional guidance from colleagues who attended the training (see also Unintended consequences).

**Table 3.** Reach and dose by country

	Colombia	Mexico	Peru
<i>Reach</i>	67 (89.3% eligible) providers attended at least one session	139 (65.0% eligible) providers attended at least one session	146 (73.3% eligible) providers attending at least one session
<i>Dose delivered</i>	Total: 16 sessions (7 T1 + 9 B) 3.5 h (1.5 T1 + 2 B) - Arm 2 and 3 4 h (2 T1 + 2 B) - Arm 4	Total: 26 sessions (18 T1,T2 + 8 B) 3 h (2 T1 + 1 B) - Arm 2 and 3 5 h (2 T1 + 1 T2 + 2 B) - Arm 4	Total: 33 sessions (20 T1,T2 + 13 B) 4 h (2 T1 + 2 B) - Arm 2 and 3 6 h (2 T1 + 2 T2 + 2 B) - Arm 4
<i>Dose delivered - COVID-19 impact</i>	All training and booster sessions delivered before the start of the COVID-19 pandemic.	Six booster sessions not delivered in part due to the COVID-19 pandemic (sessions were hard to schedule because of lower priority in the centres, and then had to be further postponed to COVID-19)	Two booster sessions not delivered in part due to the COVID-19 pandemic (sessions were first postponed due to scheduling issues and lack of trainers' time and then had to be cancelled due to COVID).
<i>Dose received</i>	On average, the providers participated: 2.3h Arm 2 2.4h Arm 3 3.1h Arm 4	On average, the providers participated: 1.9h Arm 2, 2.1h Arm 3, 2.8h Arm 4	On average, the providers participated: 2.6h Arm 2, 2.6h Arm 3, 4.2h Arm 4

*Note.* T1 – first training session (all arms), T2 – second training session (only Arm 4), B – booster session. Comparing the attending and non-attending providers on demographic characteristics (Appendix 2, Table S3) showed no overall difference by age or professional role, but a higher percentage of eligible women attending compared to eligible men (74.8% vs 65.1%,  $\chi^2=4.40$ ,  $p=0.036$ ). In Mexico, we found significant difference regarding professional role ( $\chi^2=8.24$ ,  $p=0.041$ ), as all the eligible psychologists, but only over half of the nurses attended the training.

## Fidelity and adaptation

Table 4 presents the extent to which the main elements of the training were delivered, including the *explanation of basic concepts*, *videos* and *role-plays*, based on the data obtained through observation and self-report forms. Overall, the *explanation of the basic concepts* was delivered fully. *Videos* were to large extent shown as intended in Colombia and Peru, except in a few cases where trainers ran out of time. In Mexico, after showing videos at the initial 8 training sessions, comments from providers suggested that the videos did not sufficiently reflect the organizational context, therefore the training team decided to replace the videos with hypothetical cases suggested by the providers themselves.

The *role-plays* were always delivered, but were commonly shortened due to lack of time, meaning that the participating providers only practiced part of the activities as a health professional, and were experiencing the remaining activities in the patient's role. In all three countries, a lack of time for role play was evident in the short training session. Besides the adaptation of role-plays and video demonstration, other components adapted by the trainers to better fit the local context were the slide deck (to reflect the changed sequences or to reduce the amount of information on one slide), as well as the introduction activities (knowledge quiz and discussion on attitudes towards alcohol).

## Participant response

The participants completed the evaluation questionnaire at the end of the training (response rate: Training 1 (T1) 95%, Training 2 (T2), 83%, Booster 1 (B1) 77%). All the participants highly rated their overall experience with the course for each of the training or booster sessions (above 4 on a 5-point scale). There was no difference between countries in overall experience with the course in either Training 1 or the booster session. In Training 2, providers in Peru had higher ratings of the overall experience with the course compared to providers from Mexico ( $H(1)=7.28$ ,  $p=0.007$ ), although both ratings were high. In Colombia, the providers were on average slightly less satisfied with the location and venue in the T1 than in Mexico and Peru ( $H_{\text{location}}(2)=15.97$ ,  $p<0.001$ ;  $H_{\text{venue}}(2)=22.87$ ,  $p<0.001$ ). No other major differences between the ratings of the course were found. Full post-training questionnaire results by country and arm are available in Appendix 2, Tables S4-S7.

In the questionnaire, the providers could also leave open-ended comments about the training, and their answers are summarized in Appendix 2, Table S8. Several participants expressed that they found role-plays helpful and would appreciate more practice and examples, including personalized feedback. Overall, wishing to have more time available for training was a commonly occurring comment (except for the 2<sup>nd</sup> session in Mexico). Some providers also suggested videos could better reflect the local reality. Concerning logistics, some Colombian providers noted that training location training should be closer to their workplace and the training venue could be more comfortable.

**Table 4.** Overview of training fidelity and adaptations by country

	Colombia	Mexico	Peru
<i>Fidelity - short training</i>			
<u>Explanation of basic concepts:</u>			
<ul style="list-style-type: none"> <li>• Explanation screening criteria</li> <li>• Present AUDIT-C and PHQ-2</li> <li>• Present steps of alcohol brief intervention</li> <li>• Introduction of core skills</li> </ul>	Completed fully	Completed fully	Completed fully
<u>Showing videos</u>			
<ul style="list-style-type: none"> <li>• screening video (alcohol screening – negative)</li> <li>• screening video (alcohol screening – positive; depression screening – negative)</li> <li>• brief intervention video (brief intervention for alcohol)</li> </ul>	Completed fully	Completed partially – based on feedback from first few 8 trainings, screening videos were not shown in remaining training sessions (feedback from the participants was that it did not reflect the Mexican context)	Completed fully – with exception of one case where brief intervention video was not shown due to lack of time
<u>Performing role plays</u>			
<ul style="list-style-type: none"> <li>• Screening role play in pairs, with exchange of roles</li> <li>• Brief intervention role play in pairs, with exchange of roles</li> </ul>	Completed partially – due to lack of time both role-plays had to be merged in most training sessions	Completed partially – both role plays were done, but no exchange of roles	Completed partially – in some trainings, role plays had to be merged due to lack of time
<i>Fidelity - standard training</i>			
<u>Explanation of basic concepts</u>			
Session 1:			
<ul style="list-style-type: none"> <li>• Explanation of screening criteria</li> <li>• Presentation AUDIT/AUDIT-C and PHQ-2/9</li> <li>• Presentation steps of alcohol brief intervention</li> <li>• Introduction of core skills</li> </ul>	Completed fully	Completed fully Note: In Mexican centres the referral pathways are well defined, so the trainer did not have to spend much time on it	Completed fully
Session 2			
<ul style="list-style-type: none"> <li>• Explanation of strategy for the management of co-morbid depressive symptoms</li> <li>• Presentation of the summary of services for the treatment of depressive symptoms and problematic alcohol use.</li> <li>• Presentation of treatment and follow-up options when referral is not possible</li> </ul>			
<u>Showing videos</u>			
Session 1:			
<ul style="list-style-type: none"> <li>• alcohol screening – negative</li> <li>• alcohol screening – positive; depression screening – negative</li> <li>• screening and brief intervention – alcohol and depression positive</li> <li>• brief intervention for alcohol</li> </ul>	Session 1: Completed fully	Session 1: Completed fully	Session 1: Completed fully Session 2: Completed fully
Session 2:			
<ul style="list-style-type: none"> <li>• brief intervention for alcohol and depression</li> <li>• referral for alcohol problems and co-morbid depressive symptoms</li> <li>• patient not accepting referral</li> </ul>	Session 2: Completed fully – exception one training where one video could not be shown due to lack of time	Session 2: Completed partially: based on feedback from first few 8 trainings, screening videos were not shown in remaining training sessions	

**Table 4.** Continued.

	Colombia	Mexico	Peru
<u>Performing role plays</u>			
Session 1:	Session 1 and 2: completed		
• Screening role play in pairs, with exchange of roles	partially - All role plays were merged, focus was on the first one. Role-plays from session 2 not done in one of the trainings (lack of time). Overall less time dedicated for role-plays	Session 1: completed fully; if no time then postponed to session 2	Session 1: Completed fully
• Brief intervention role play in pairs, with exchange of roles		Session 2: Completed partially: both role plays were done, but no exchange of roles	Session 2: Completed fully
Session 2:			
• Brief intervention for alcohol and depression role play in pairs, with exchange of roles			
• Referral role play in pairs, with exchange of roles			

Some Peruvian providers wished for more sign-up time slots, as they are working on different schedules, and training reminders. Another theme among Peruvian providers was the importance of social support– both appreciating meeting other providers with similar interests, and wishing more providers would join the training. The interviewed trainers also corroborated the providers’ reports on the importance of the opportunity to practice the skills through role-plays, and emphasized the impact of familiarity with the used instruments – less familiarity was indirectly associated with less time to practice due to more time necessary for explanation.

### Unintended consequences

No negative unintended consequences were detected in any of the countries, but two positive unintended consequences emerged in Mexico. Interviews suggested that the participating trainers established a good relationship with some PHCCs through their work with SCALA, which led to continued collaboration also beyond the scope of the training and established them as ‘go-to’ local experts on the topic of alcohol (for example, resulting in invitations to speak at relevant events). Additionally, in some Mexican PHCCs, it emerged that the liaising providers (contact persons, who were most closely engaged with SCALA activities) engaged themselves to provide additional explanation and training to their colleagues who were not able to attend the training. Thus, also those providers received information and training from their attending colleagues, broadening the reach of the training.

### Relationship of process evaluation variables with the outcome

To assess the relationship of context (demographic factors), implementation and mechanisms of impact (participant response) with the outcome, we considered the sample of providers attending minimum one training and participating in minimum one of the five implementation period months (N=352). We compared the providers screening in practice at least once (“screeners”, N=173) with providers not doing any alcohol screening (“non-screeners”, N=179) on characteristics reflecting the broad categories of the MRC framework, using appropriate univariate statistic test (Chi Square

or Mann-Whitney U). Results are summarized in Figure 4, with complete analysis available in Tables S9-S11 in Appendix 2.

**Figure 4.** Comparison of screeners and non-screeners on process evaluation variables

		Total	Colombia	Mexico	Peru
Outcome	% screeners among training attendees	49%	76%	53%	34%
	% screeners among non-attendees	18%	13%	29%	2%
	% screeners among all providers eligible for training	40%	69%	44%	25%
Context	Gender	50% of women and 46.3% of men screened	74.5% of women and 81.3% of men screened	58.9% of women and 38.6% of men screened	33.1% of women and 36.4% of men screened
	Age	Screeners' average age: 37.8 years; non-screeners: 39.6 years	Screeners' average age: 32.4 years; non-screeners: 31.4	Screeners' average age: 36.4 years; non-screeners: 34.7	Screeners' average age: 45.4 years; non-screeners: 44.0
	Profession	58.1% of doctors, 45.8% of nurses, 69.7% of psychologists and 36.1% other professions screened	93.1% of doctors, 81.3% of nurses, 100% of psychologists and 47.6% other professions screened	58.0% of doctors, 41.7% of nurses, 58.3% of psychologists and 40.6% other professions screened	19.2% of doctors, 20.0% of nurses, 75.0% of psychologists and 31.3% other professions screened
Implementation	Arm (short vs. standard training)	46.2% from Arm 2, 50.9% from Arm 3 and 51.2% from Arm 4 screened	72.4% from Arm 2, 81.0% from Arm 3 and 76.5% from Arm 4 screened	54.3% from Arm 2, 47.1% from Arm 3 and 57.1% from Arm 4 screened	29.4% from Arm 2, 38.2% from Arm 3 and 36.4% from Arm 4 screened
	Number of hours participated	Screeners on average more hours of training participation (2.82 vs 2.52)	Screeners: 2.84 hours; non-screeners: 2.28 hours	Screeners on average more hours of training participation (2.43 vs 2.03)	Screeners on average more hours of training participation (3.39 vs 2.89)
	Number of sessions participated	Screeners on average more sessions of training participation (1.58 vs 1.36)	Screeners on average more sessions of training participation (1.59 vs 1.25)	Screeners on average more sessions of training participation (1.51 vs 1.26)	Screeners on average more sessions of training participation (1.69 vs 1.44)
	Participation in T1	49.7% of T1 attendees and 45.5% of non-attendees screened	82.1% of T1 attendees and 45.5% of non-attendees screened	55.4% of T1 attendees and 40.7% of non-attendees screened	32.1% of T1 attendees and 66.7% of non-attendees screened
	Participation in T2	52.2% of T2 attendees and 23.5% of non-attendees screened	/	57.9% of T2 attendees and 50.0% of non-attendees screened	45.2% of T2 attendees and 15.4% of non-attendees screened
	Booster session	60.7% of booster attendees and 41.5% of non-attendees screened	77.8% of booster attendees and 72.7% of non-attendees screened	60.5% of booster attendees and 49.0% of non-attendees screened	46.2% of booster attendees and 26.2% of non-attendees screened
	Mechanisms of Impact - Participant response	Overall satisfaction - T1	Screeners: 4.57; Non-screeners: 4.52	Screeners: 4.53; Non-screeners: 4.14	Screeners: 4.53; Non-screeners: 4.71
Overall satisfaction - T2		Screeners: 4.50; Non-screeners: 4.59	/	Screeners: 4.20; Non-screeners: 4.56	Screeners: 4.80; Non-screeners: 4.61
Overall satisfaction - B1		Screeners: 4.56; Non-screeners: 4.51	Screeners: 4.42; Non-screeners: 4.33	Screeners: 4.62; Non-screeners: 4.60	Screeners: 4.67; Non-screeners: 4.56
Overall perceived utility - T1		Screeners: 4.66; Non-screeners: 4.63	Screeners: 4.61; Non-screeners: 4.57	Screeners: 4.63; Non-screeners: 4.76	Screeners: 4.76; Non-screeners: 4.57
Overall perceived utility - T2		Screeners: 4.68; Non-screeners: 4.64	/	Screeners: 4.29; Non-screeners: 4.57	Screeners: 4.87; Non-screeners: 4.67
Overall perceived utility - B1		Screeners: 4.65; Non-screeners: 4.54	Screeners: 4.58; Non-screeners: 4.22	Screeners: 4.54; Non-screeners: 4.80	Screeners: 4.79; Non-screeners: 4.59
Other differences		Location, venue in T1 (screeners lower satisfaction rating), Exchange of experience with other participants during booster session (screeners higher perceived utility rating)	No other differences	Screeners lower satisfaction ratings with other participants at T1	Screeners higher rating on aspects of perceived utility; Learning about screening criteria for SCALA, learning about steps of brief intervention, learning about treatment options when referral is not possible, exchange of experience with other providers, practical solutions for problems
Legend:	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="background-color: #f8d7da; padding: 2px;">Not significant</div> <div style="background-color: #d4edda; padding: 2px;">p ≤ 0.05</div> <div style="background-color: #c3e6cb; padding: 2px;">p ≤ 0.01</div> <div style="background-color: #a6c93c; padding: 2px;">p ≤ 0.001</div> </div>				

Comparison of the two groups by demographic characteristics showed no significant difference in age (although in all three countries the screeners were on average slightly

older than non-screeners). Significant gender differences appeared only in Mexico, where 58.9% of women and 38.6% of men among the training attendees screened ( $\chi^2=4.96$ ,  $p=0.026$ ). There was also a significant difference by profession in Colombia and Peru; in Colombia, both doctors and psychologists were more likely to screen after attending the training ( $\chi^2=14.53$ ,  $p=0.002$ ), although it should be noted that in absolute terms doctors represented the largest part of training attendees. In Peru, the psychologists among the training attendees were more likely to screen than any other profession ( $\chi^2=9.64$ ,  $p<0.001$ ).

When comparing the screeners and non-screeners on implementation factors, there was a clear trend in the total sample of screeners spending more time in training, both in terms of hours and sessions participated (2.82 vs 2.52 hours of training participation,  $p=0.003$ ; and 1.58 vs 1.36 training sessions ( $p=0.001$ ). There was no difference by arm, meaning the providers receiving the standard training were not more likely to screen than providers in the short training arms. Comparison by the participant response showed no difference between screeners and non-screeners based on their satisfaction and perceived utility of the training (except for overall satisfaction with the training in Peru).

Additionally, we also looked at alcohol screening among the non-reached providers (providers eligible for, but not present at any of the trainings). Overall, 18% of providers not present at any of the training sessions still screened in practice. Most of them were coming from Mexico.

## DISCUSSION

This paper considered the process indicators related to training primary health care providers in Colombia, Mexico and Peru to deliver alcohol management and depression programme, as well as the relationships of those indicators with the primary outcome behaviour, alcohol screening. To our knowledge, this is one of the first papers examining training as an implementation strategy through the process evaluation lens while including a multi-site comparison in the middle-income context.

### Process indicators considerations

Reach of the programme was high, with 72.3% of the eligible providers attending at least one of the offered trained sessions. In Mexico, reach was lower compared to the other two countries, but was broadened by participating providers training their non-participating peers, which is reflected also in a relatively high percentage of screeners among providers not attending the training. The country-dependent dose delivered shows that the length of the training was adapted based on the countries' needs and familiarity of the target population with the topics (e.g. in Mexico, the depression part could be shortened as providers were already familiar with the topic through the World Health Organization's Mental Health Gap Action Programme trainings (World Health Organization, 2008),

whereas for most participants in Peru the topic of alcohol screening was completely new (Kokole, Jané-Llopis, et al., 2021).

Fidelity of the training was related to dose; e.g. lack of time was mainly reflected in role-plays being shortened; and also to participant response: in Mexico, the videos were less well accepted in the initial trainings and were replaced with practicing with hypothetical cases. Despite assessing fidelity as part of the process evaluation, the perspective of the research and training teams when developing and implementing the trainings was aligned with the dynamic sustainability framework (Chambers et al., 2013), which suggests that quality improvement is more important than quality assurance, and considers that intervention can not be completely optimized prior to implementation, but can instead be improved through ongoing development, evaluation and refinement in diverse contexts. From this perspective, decisions of local training teams to leave out the videos that were not well received do not represent failure to adhere to the manual, but continued refinement of the training to better fit the local context – “innovation” rather than “drift” in terminology of Bumbarger & Perkins (2008). The activities remained aligned with theoretical background (Bandura, 1977), as suggested by Moore et al. (2014), just shifting the focus from vicarious learning to enactive mastery.

### **Process variables relationship with outcome considerations**

The developed training was shown to be successful in getting the providers to screen for risky alcohol use (Anderson et al., 2021), thus we also explored which process indicators differed between the screeners and non-screeners. Two of them stood out by relevance: dose received, and professional role.

Overall, screeners received more training (both in terms of length and number of sessions), which points to the clear importance of the dose received (within the country – between countries the amounts of training differed for reasons mentioned earlier). The dose received, however, includes attendance of booster sessions which took place during the implementation period. This means that it’s possible that providers who already started screening after the first training were more likely to join the booster sessions, therefore entering a positive feedback loop (Petticrew et al., 2019) – but a more precise time series analysis would be necessary to examine these dynamics and see how that impacted the total number of screenings, which is beyond the scope of this paper. Given the difference between screeners and non-screeners in booster session attendance, booster sessions were important in all three countries, but the importance (inferred from the largest difference) was strongest in Peru, where providers had the least support from other sources and the least familiarity with the topic. In Colombia, there was organizational support, as enrolment in the study took place on the organizational level, and in Mexico, many providers had previous experience and support of health system policies, being expected to include alcohol use in the patient clinical history. This also aligns with the feedback of the Peruvian providers on the importance of social support

and appreciation of encountering other providers with similar interests in the training – booster sessions served as additional support in an unsupportive context.

If the dose received seemed to be similarly important across the three countries, this was not the case for the professional role: the country-level dynamics were different, also due to different sample composition. In Colombia, most of the providers were doctors or nurses, with few psychologists, and all of those roles were more likely to screen compared to other professions. In Mexico, both doctors and psychologists were more likely to screen compared to nurses and other professions (although psychologists accounted only for a small proportion of the sample). In Peru, psychologists were more likely to screen than doctors, nurses or other professional roles. These differences perhaps reflect the differences in the country health systems and roles of professionals (specifically for substance use, but also for mental health more broadly) – e.g. in Peru substance use is often framed as part of mental health and alcohol screening is still considered as a domain of psychologists (Cavero et al., 2018), and in Colombia, PHC providers do not always consider being well equipped for dealing with mental health related (“emotional”) topics (Shannon et al., 2021).

For two indicators, no differences were found: arm and participant response (satisfaction and perceived utility). No difference in the arm allocation between the screeners and non-screeners means that extra training session received by Arm 4 did not have an impact on the outcome. While this seems contradictory to the dose result above, a possible explanation is that we only looked at the first step in SCALA protocol use, which is alcohol screening, while the second training session in Arm 4 emphasized the depression part of the care pathway. Another possible explanation for the discrepancy between the two results (arm vs dose) could also be the greater difficulty of Arm 4 training content, as providers had to master a more complex care pathway, and thus extra time in training did not translate into more practice in alcohol screening. The finding that longer and more complex intervention did not translate into more screening is aligned both with the theory (Rogers’ innovation complexity theorized to lead to lower adoption (Rogers, 2003)), as well as to the evidence from primary care practice (Lau et al., 2016).

Furthermore, satisfaction with training and perceived utility for practice was not related to the outcome; possibly due to the ceiling effect, as all of the ratings were high, also rendering any differences on single items (mostly found in Peru) less practically relevant. However, a recent paper examining screening and brief intervention training effectiveness found that course completion satisfaction was not associated with immediate screening, but with the amount of screening in 12 months (Acquavita et al., 2021). Therefore, further analyses at the end of the project could be useful to associate those process indicators with the total amount of screening conducted.



## Strengths and limitations of the study

The main strength of this process evaluation is that it employed a range of methods, combining both quantitative and qualitative insights, which enabled a better understanding of training implementation and outcomes through data integration and corroboration through data triangulation. While we managed to collect a large amount of data in a hard-to-reach setting, there were resource and feasibility restrictions which led to some data collection limitations. For example, the only feedback received from providers was through the post-training questionnaire, which might miss some nuances of their experience. Furthermore, it was not feasible to reach all the non-attending providers, therefore data on reasons for their non-attendance had to be collected through observations from the trainers and training organizers. Finally, the number of interviews was also small and unlike to reach saturation. While not necessarily a limitation of the study per se, the local research and training teams also raised the issue of the interaction between process evaluation and training implementation – in the already scarce time available to deliver the trainings, several evaluation activities also had to be integrated, such as checking the attendance, and completing the post-training questionnaires. Another issue to be noted is the use of mechanisms of impact as a studied category – based on the MRC framework (Moore et al., 2015), we included participant response and unintended consequences as subcategories in this paper, but not variables possibly mediating the outcome (such as knowledge or attitudes), as those will be examined separately. Last, in terms of outcome, we did not make adjustments to the amount of consultations per provider. The reason for this was that we currently only looked at whether the providers did any screening, rather than how much. Further data analysis is needed to unpack the dynamics of the amount of screening throughout the implementation of the whole SCALA project, which was beyond the scope of this paper.

## Implications for practice

Based on the results of our process evaluation, we collected a number of key learning points which might be relevant for further practice for training implementation in middle-income contexts (Table 5).

Despite the success of the training, half of the participating providers did not screen in practice, indicating that training alone was insufficient for behaviour change, and other barriers apart from the lack of skills were likely impacting their screening. Training can thus be seen as a first and important step, but combination with multiple implementation strategies (such as supervision or community support) tends to produce better outcomes both on the provider and the patient level (Keurhorst et al., 2015; Rowe et al., 2018).

**Table 5.** Key recommendations based on learning points from SCALA training process evaluation*How to increase the rates of alcohol screening through provider training:*

- At the individual level, dose of training is important – the more of the offered training the provider receives, the better. Increased length of the training is beneficial, unless it comes at the cost of increased complexity of the intervention: a combination of simple intervention with enough time to practice at the training is optimal. On the other hand, dose needs to be balanced with providers' availability; in our case, more than 2 hours of training at the time would not be feasible.
- At country level, the amount of necessary training depended on the existing knowledge and familiarity with the topic of the providers, therefore the length should be adapted to the country context.
- Opportunity to practice, for example through role-playing, is considered helpful by the providers; thus, allocating sufficient time for it within the training session is important
- Booster sessions can serve an important role in encouraging a positive feedback loop in providers' behaviour, as they are more likely to be attended by the motivated providers who already started with implementation and need additional support. Booster sessions might be especially important in the context where less organizational or structural support is available.

## Conclusion

The SCALA training programme was well received by the participants and led to more providers conducting alcohol screening in primary health care in Colombia, Mexico and Peru. The training was suitable for different professional roles, but the existing health system structures meant psychologists and doctors were more likely to use the protocol after attending the training, with exact dynamics differing by country. The amount of the training received by the provider was important on the individual level, and the booster sessions were especially important in a context with less institutional support. Overall, our study showed the importance of tailoring the initial training (e.g. adapting sessions based on providers' existing knowledge) as well as ongoing refinement to better fit the local context.

## **APPENDIX 1: DESCRIPTION OF TRAINING DEVELOPMENT AND ADAPTATION AND LINKS TO SCALA TRAINING MATERIALS**

### **I. Description of training development and adaptation**

The training development team consisted of Spanish-speaking clinical professionals with previous experience in training development and implementation (also in the field of alcohol screening and brief interventions), combined with academic experts in the field of alcohol and depression. Additionally, the local partners from the three participating countries (Colombia, Mexico and Peru) participated in tailoring the programme to the PHC setting in the participating municipalities.

The training package consisted of 4 products: the training manual, handouts and materials (including evaluation questionnaire), the training course presentations, the training modelling videos, and the TNT (training new trainers) sessions (including slide deck, training materials as above, 2-day in-person course, follow-up 'reminder' videos). The general content & structure of the training sessions (presentations and manual) were developed in English based on elements of the WHO 2017 alcohol brief intervention training manual for primary care and PHEPA 2007 Training Programme on Identification and Brief Interventions; as well as on the SCALA clinical package materials. The written materials were revised in English, translated into Spanish, revised and underwent general tailoring for language differences and any health system differences by the Latin American partners. Five training modelling video scripts were developed through live role-play exercises by the lead clinical professionals on the training team, transcribed and translated for assessment by the academic expert team, and revised to shorten and tailored for local language in consultation with the Latin American project partners. The scripts were used to film the model clinical scenarios with a mixture of Latin American actors (from the three countries in SCALA). Initially, the project aim was to only develop and evaluate the standard training on the standard clinical package (in combination with community support as the other implementation strategy tested in SCALA), but in the preparation phase, it became clear that development and testing of the short training and package will be necessary to ensure the feasibility in the three countries. This resulted in a further two model scenario videos being developed by the same process – scripted from role play, tailored to Latin American Spanish, and filmed with Latin American actors. All modelling videos were used in the TNT course. TNT course took place in Bogota, Colombia in May 2018. The training was conducted by an addiction specialist with several years of experience in implementing brief interventions and training delivery (also a member of the training development team). Over two full days, the participants (future trainers) experienced the training sessions themselves – the trainer delivered the training unit by unit, followed by discussion and reflection by the whole group. A brief pre-post evaluation showed high satisfaction with the training and increased self-rated knowledge and self-efficacy of the future trainers.

After the TNT course, the materials were revised based on the comments and outcomes of the course sessions (the training team noted areas of difficulty and partners gave

feedback on the materials), and training packages for each country, standard and short versions were finalised and made available. To support the on-site training sessions, a series of 3 ‘refresher’ videos were created to highlight key take-home points from the TNT sessions in the participants own words, with reinforcement of key messages and learning points from the TNT trainer. Further individual tailoring by each trainer was encouraged and facilitated to make their sessions to health professionals as fluid, acceptable and relevant as possible, and to adapt to different constraints in the different intervention sites.

## II. Links to SCALA training materials

Links to SCALA training materials are available on:

EN: <https://www.scalaproject.eu/index.php/project-outputs>

ES: <https://www.scalaproject.eu/index.php/es/resultados-del-proyecto>

### Videos overview (all in Spanish)

<i>Video</i>	<i>Content covered</i>	<i>Video URL</i>	<i>Session</i>
Sofia – Video A	Screening Alc- / Dep	<a href="https://youtu.be/hrtuQI0uZ7U">https://youtu.be/hrtuQI0uZ7U</a>	Short
Juan – Video B	Screening Alc+ / Dep-	<a href="https://youtu.be/6Gl_Cp0lAmE">https://youtu.be/6Gl_Cp0lAmE</a>	Short
Javier – Video C	BI for alcohol	<a href="https://youtu.be/Q7sfR0nkZwU">https://youtu.be/Q7sfR0nkZwU</a>	Short
Pedro – Video 1a	Screening Alc+ / Dep-	<a href="https://youtu.be/cQ6uJwrDU0M">https://youtu.be/cQ6uJwrDU0M</a>	Standard 1
Paola – Video 2a	Screening Alc+ / Dep+	<a href="https://youtu.be/e5cfXembmc8">https://youtu.be/e5cfXembmc8</a>	Standard 1
Pedro – Video 1b	BI for alcohol	<a href="https://youtu.be/pDDGCeLnuYk">https://youtu.be/pDDGCeLnuYk</a>	Standard 1
Paola – Video 2b	BI for alcohol + depression	<a href="https://youtu.be/dEjA32_z5Co">https://youtu.be/dEjA32_z5Co</a>	Standard 2
Ana Maria – Video 3	Referral for alcohol problems and co-morbid depression	<a href="https://youtu.be/Qv4UZHL3vQ8">https://youtu.be/Qv4UZHL3vQ8</a>	Standard 2

## APPENDIX 2: SUPPLEMENTARY TABLES

*Table S1.* Sample description (providers attending at least one training up to month 5)

*Table S2.* Reach and dose of the training - overall, by country and by arm

*Table S3.* Comparison of eligible providers attending and not attending training by age, gender and professional role

*Table S4.* Post training questionnaire response - satisfaction with aspects of training, by country

*Table S5.* Post training questionnaire response - perceived utility with aspects of training, by country

*Table S6.* Post training questionnaire response - satisfaction with aspects of training, by arm

*Table S7.* Post training questionnaire response - perceived utility with aspects of training, by arm

*Table S8.* Summary of open answers to post-training questionnaire - comments regarding training and suggestions for improvements

*Table S9.* Relationship between implementation factors and outcome; comparison between screeners and non-screeners overall and by country

*Table S10.* Relationship between participant response and outcome; comparison between screeners and non-screeners overall and by country

*Table S11.* Relationship between contextual factors and outcome; comparison between screeners and non-screeners overall and by country

**Table S1.** Sample description (providers attending at least one training up to month 5)

<i>Sample description</i>				
	Colombia (N=67, 19.0%)	Mexico (N=139, 39.5%)	Peru (N=146, 41%)	Overall (N=352, 100%)
	M (SD) / %	M (SD) / %	M (SD) / %	M (SD) / %
<i>Gender</i>				
Female	76.1	68.3	84.9	76.7
Male	23.9	31.7	15.1	23.3
<i>Profession<sup>a</sup></i>				
Doctor	43.3	58.3	17.8	38.6
Nurse	23.9	8.6	13.7	13.6
Psychologist	1.5	8.6	13.7	9.4
Other <sup>a</sup>	31.3	23.0	54.8	37.8
<i>Age<sup>b</sup></i>	32.16 (9.84)	35.59 (12.94)	44.42 (10.59)	38.69 (12.48)
<i>Arm</i>				
2 – short training only	43.3	33.1	46.6	40.6
3 – short training + community support	31.3	36.7	23.3	30.1
4 – standard training + community support	25.4	30.2	30.1	29.3
<i>Did screening in baseline period</i>	22.4	36.7	5.5	21.0
<i>Did screening in implementation period</i>	76.1	52.5	33.6	49.1
<i>Attended at least 1 training session</i>	100.0	100.0	100.0	100.0

<sup>a</sup> missing data for two providers in Mexico

<sup>b</sup> missing data for three providers in Colombia, four in Mexico

**Table S2.** Reach and dose of the training - overall, by country and by arm

	Reach												Dose delivered			Dose received							
	Attendance T1				Attendance T2				Attendance booster session				Attendance at least 1 session		Hours of training offered	Number of sessions offered (incl. booster)	Number of hours in training			Number of sessions attended			
	N	N	%	%	N	N	%	%	N	N	%	%	N	N			%	Min	Max	SD	One	Two	Three
<b>Total</b>	309	452	68.4%	69	116	59.5%	140	300	46.7%	352	487	72.3%	1.0	6.0	2.7	1.2	58.5%	36.1%	5.4%				
Colombia	56	66	84.8%	0	0	0	45	55	81.8%	67	75	89.3%	1.5	4.0	2.7	1.0	49.3%	50.7%					
Mexico	112	188	59.6%	38	51	74.5%	43	111	38.7%	139	214	65.0%	1.0	5.0	2.2	0.8	63.3%	34.5%	2.2%				
Peru	141	198	71.2%	31	65	47.7%	52	134	38.8%	146	198	73.7%	2.0	6.0	3.1	1.4	58.2%	30.8%	11.0%				
<b>Arm 2</b>	120	167	71.9%				61	141	43.3%	143	193	74.1%	1.0	4.0	2.3	0.9	74.1%	25.9%					
Colombia	20	27	74.1%				19	25	76.0%	29	35	82.9%	1.5	3.5	2.3	0.9	65.5%	34.5%					
Mexico	34	56	60.7%				20	52	38.5%	46	74	62.2%	1.0	3.0	1.9	0.7	82.6%	17.4%					
Peru	66	84	78.6%				22	64	34.4%	68	84	81.0%	2.0	4.0	2.6	0.9	72.1%	27.9%					
<b>Arm 3</b>	100	153	65.4%				41	83	49.4%	106	160	66.3%	1.0	4.0	2.4	0.8	67.0%	33.0%					
Colombia	21	23	91.3%				15	17	88.2%	21	23	91.3%	1.5	3.5	2.9	0.9	28.6%	71.4%					
Mexico	45	81	55.6%				16	42	38.1%	51	88	58.0%	1.0	3.0	2.1	0.6	80.4%	19.6%					
Peru	34	49	69.4%				10	24	41.7%	34	49	69.4%	2.0	4.0	2.6	0.9	70.6%	29.4%					
<b>Arm 4</b>	89	132	67.4%	69	116	59.5%	38	76	50.0%	103	134	76.9%	1.0	6.0	3.4	1.4	28.2%	53.4%	18.4%				
Colombia	15	16	93.8%	0	0	0	11	13	84.6%	17	17	100.0%	2.0	4.0	3.1	1.0	47.1%	52.9%					
Mexico	33	51	64.7%	38	51	74.5%	7	17	41.2%	42	52	80.8%	1.0	5.0	2.8	1.0	21.4%	71.4%	7.1%				
Peru	41	65	63.1%	31	65	47.7%	20	46	43.5%	44	65	67.7%	2.0	6.0	4.2	1.6	27.3%	36.4%	36.4%				

**Table S3.** Comparison of eligible providers attending and not attending training by age, gender and professional role

	N		Age			Gender			Professional role			
	Attending	Non-attending	M(SD) - attending	M(SD) - non attending	Mann-U	P	% attending	Chi square	P	% attending	Chi square	P
Total	352	135	38.7 (12.5)	40.0 (12.4)	21764	0.320	74.1% eligible females vs. 65.1% eligible males	4.40	<b>0.056</b>	67.7% of all eligible doctors, 82.5% psychologists, 75.1% others	4.95	0.176
Colombia	67	8	32.2 (9.8)	37.9 (14.8)	207.5	0.384	86.4% eligible females vs. 100% eligible males	2.43	0.119	93.5% of all eligible doctors, 100% psychologists, 80.8% others	3.11	0.375
Mexico	139	75	35.6 (12.9)	36.6 (11.9)	4670.5	0.437	65.5% eligible females vs. 63.8% eligible males	0.06	0.802	63.3% of all eligible doctors, 100% psychologists, 65.2% others	8.24	<b>0.041</b>
Peru	146	52	44.4 (10.6)	45.1 (11.1)	3647	0.674	79.0% eligible females vs. 53.7% eligible males	10.77	<b>0.001</b>	61.9% of all eligible doctors, 74.1% nurses, 74.1% psychologists, 78.4% others	4.20	0.241
Arm 2	143	50	42.2 (12.7)	38.6 (12.7)	4126	0.073	74.8% eligible females vs. 71.7% eligible males	0.17	0.676	69.4% of all eligible doctors, 85.7% psychologists, 76.9% others	2.16	0.539
Colombia <sup>a</sup>	29	6	29.9 (8.8)	35.8 (13.1)	64	0.388	79.3% eligible females vs. 100% eligible males	1.50	0.221	87.5% of all eligible doctors, 73.7% others	2.90	0.234
Mexico <sup>b</sup>	46	28	43.5 (13.7)	36.1 (11.0)	846.5	<b>0.014</b>	61.7% eligible females vs. 63.0% eligible males	0.01	0.914	64.4% of all eligible doctors, 100% psychologists, 50.0% others	5.10	0.165
Peru	68	16	46.4 (10.1)	44.0 (13.1)	615.5	0.415	81.7% eligible females vs. 76.9% eligible males	0.17	0.687	75.0% of all eligible doctors, 77.8% psychologists, 83.7% others	0.67	0.881
Arm 3	106	54	36.2 (11.8)	40.5 (13.6)	2293	0.085	71.0% eligible females vs. 50% eligible males	5.49	<b>0.019</b>	57.6% of all eligible doctors, 84.6% psychologists, 70.4% others	4.80	0.187
Colombia	21	2	34.7 (10.6)	44.0 (24.0)	14	0.506	88.9% eligible females vs. 100% eligible males	0.61	0.435	93.3% of all eligible doctors, 100% others	1.17	0.558
Mexico <sup>c</sup>	51	37	30.9 (9.7)	36.8 (12.9)	650	<b>0.039</b>	59.1% eligible females vs. 54.5% eligible males	0.14	0.708	48.8% of all eligible doctors, 100% psychologists, 65.6% others	4.37	0.225
Peru	34	15	45.0 (10.3)	48.8 (10.8)	187.5	0.143	82.5% eligible females vs. 11.1% eligible males	17.63	<b>&lt;0.001</b>	40.0% of all eligible doctors, 80.0% psychologists, 73.7% others	5.291h	0.152
Arm 4	103	31	36.3 (11.8)	41.1 (10.4)	1114.5	<b>0.018</b>	80.0% eligible females vs. 70.5% eligible males	1.51	0.218	76.2% of all eligible doctors, 76.9% psychologists, 77.8% others	0.13	0.988
Colombia	17	0	Comparison not possible as all eligible providers participated									
Mexico <sup>d</sup>	42	10	32.7 (11.6)	36.8 (11.4)	157	0.253	84.4% eligible females vs. 75.0% eligible males	0.70	0.404	76.9% of all eligible doctors, 100% psychologists, 85.7% others	1.37	0.503
Peru	44	21	40.9 (11.0)	43.2 (9.5)	389	0.305	71.7% eligible females vs. 57.9% eligible males	1.18	0.278	62.5% of all eligible doctors, 62.5% psychologists, 73.5% others	1.18	0.757

<sup>a</sup> Age data for 1 attending provider missing<sup>b</sup> Age data for 1 attending provider missing<sup>c</sup> Age data for 2 attending and 1 non attending providers missing<sup>d</sup> 1 attending provider missing age data, 2 attending providers missing professional role data

**Table S4.** Post training questionnaire response - satisfaction with aspects of training, by country (COL=Colombia, MEX= Mexico, PER=Peru)

		N	M	SD	Min	Max	Kruskal-Wallis H	Sig	Post-hoc	
Training 1	Overall experience with the course	COL	46	4.46	0.55	3	5	3.40	0.182	
		MEX	113	4.61	0.51	3	5			
		PER	136	4.52	0.52	3	5			
		Total	295	4.55	0.52	3	5			
	Information received before the course	COL	46	4.02	0.61	3	5	7.49	<b>0.024</b>	COL < MEX
		MEX	112	4.32	0.70	2	5			
		PER	133	4.20	0.70	2	5			
		Total	291	4.22	0.69	2	5			
	Location	COL	46	3.98	0.77	2	5	15.97	<b>&lt;0.001</b>	COL < MEX, COL < PER
		MEX	112	4.47	0.66	2	5			
		PER	135	4.36	0.65	2	5			
		Total	293	4.34	0.69	2	5			
	Venue	COL	46	3.93	0.71	2	5	22.87	<b>&lt;0.001</b>	COL < MEX, COL < PER
		MEX	113	4.51	0.58	3	5			
		PER	136	4.35	0.65	3	5			
		Total	295	4.35	0.66	2	5			
	Duration	COL	46	4.15	0.63	3	5	3.88	0.144	
		MEX	112	4.33	0.62	3	5			
		PER	134	4.35	0.62	2	5			
		Total	292	4.31	0.62	2	5			
	Trainer	COL	46	4.59	0.50	4	5	8.48	<b>0.014</b>	COL < MEX
		MEX	113	4.80	0.40	4	5			
		PER	136	4.66	0.49	3	5			
		Total	295	4.70	0.47	3	5			
My participation	COL	46	4.13	0.62	3	5	3.29	0.193		
	MEX	113	4.30	0.64	3	5				
	PER	136	4.22	0.54	3	5				
	Total	295	4.24	0.59	3	5				
Other participants	COL	46	4.13	0.58	3	5	1.92	0.382		
	MEX	109	4.24	0.72	2	5				
	PER	132	4.26	0.49	3	5				
	Total	287	4.23	0.60	2	5				
Training 2	Overall experience with the course	COL					7.28	<b>0.007</b>	MEX < PER	
		MEX	24	4.33	0.48	4				5
		PER	33	4.70	0.47	4				5
		Total	57	4.54	0.50	4				5
	Information received before the course	COL	0					0.92	0.337	
		MEX	24	4.38	0.65	3	5			
		PER	33	4.21	0.65	3	5			
		Total	57	4.28	0.65	3	5			
	Location	COL						0.06	0.808	
		MEX	24	4.42	0.72	3	5			



**Table S4.** Continued.

		N	M	SD	Min	Max	Kruskal-Wallis H	Sig	Post-hoc
Venue	PER	32	4.50	0.57	3	5			
	Total	56	4.46	0.63	3	5			
	COL						0.13	0.719	
	MEX	24	4.46	0.59	3	5			
	PER	33	4.52	0.57	3	5			
Duration	Total	57	4.49	0.57	3	5			
	COL						3.77	0.052	MEX < PER
	MEX	23	3.87	1.06	2	5			
	PER	33	4.42	0.61	3	5			
	Total	56	4.20	0.86	2	5			
Trainer	COL						0.01	0.931	
	MEX	24	4.63	0.49	4	5			
	PER	33	4.64	0.49	4	5			
	Total	57	4.63	0.49	4	5			
	My participation	COL						2.58	0.108
MEX		24	4.04	0.69	3	5			
PER		33	4.33	0.60	3	5			
Total		57	4.21	0.65	3	5			
Other participants		COL						0.66	0.416
	MEX	23	4.13	0.69	3	5			
	PER	31	4.29	0.53	3	5			
	Total	54	4.22	0.60	3	5			
	Booster session	Overall experience	COL	36	4.39	0.64	3	5	4.76
MEX		21	4.67	0.58	3	5			
PER		51	4.61	0.70	1	5			
Total		108	4.55	0.66	1	5			

**Table S5.** Post training questionnaire response – perceived utility with aspects of training, by country (COL=Colombia, MEX= Mexico, PER=Peru)

		N	M	SD	Min	Max	Kruskal-Wallis H	Sig	Post-hoc
Training 1	Overall training 1	COL	46	4.59	0.54	3	5	1.57	0.457
		MEX	105	4.70	0.48	3	5		
		PER	135	4.63	0.54	2	5		
		Total	286	4.65	0.52	2	5		
		Information on impact of alcohol and costs of alcohol use	COL	46	4.46	0.62	3	5	5.48
MEX	98		4.59	0.53	3	5			
PER	134		4.39	0.65	3	5			
Total	278		4.47	0.61	3	5			
Discussion on attitudes to alcohol	COL		46	4.39	0.54	3	5	1.90	0.387
	MEX	98	4.51	0.58	3	5			
	PER	134	4.46	0.58	2	5			
	Total	278	4.46	0.57	2	5			

Table S5. Continued.

		N	M	SD	Min	Max	Kruskal-Wallis H	Sig	Post-hoc
Phrases to start the discussion with the patient	COL	46	4.41	0.50	4	5	1.40	0.496	
	MEX	97	4.48	0.58	3	5			
	PER	133	4.51	0.52	3	5			
	Total	276	4.49	0.54	3	5			
Presentation of screening criteria for SCALA	COL	46	4.48	0.51	4	5	1.51	0.471	
	MEX	98	4.53	0.56	3	5			
	PER	134	4.45	0.56	3	5			
	Total	278	4.48	0.55	3	5			
Role play to practice screening	COL	46	4.30	0.55	3	5	5.75	0.057	
	MEX	98	4.50	0.65	3	5			
	PER	134	4.51	0.54	3	5			
	Total	278	4.47	0.59	3	5			
Presentation of steps of brief intervention	COL	46	4.52	0.51	4	5	17.62	<0.001	PER < MEX
	MEX	98	4.71	0.54	3	5			
	PER	134	4.43	0.58	3	5			
	Total	278	4.54	0.57	3	5			
Role play to practice delivering brief intervention	COL	46	4.41	0.65	3	5	0.76	0.683	
	MEX	98	4.48	0.69	3	5			
	PER	134	4.48	0.54	3	5			
	Total	278	4.47	0.62	3	5			
Training 2 Overall training 2	COL						4.64	0.031	MEX < PER
	MEX	14	4.43	0.51	4	5			
	PER	33	4.76	0.44	4	5			
	Total	47	4.66	0.48	4	5			
Role playing delivering brief intervention for alcohol with comorbid depressive symptoms	COL	13	4.54	0.52	4	5	1.85	0.397	
	MEX	21	4.62	0.50	4	5			
	PER	34	4.74	0.45	4	5			
	Total	68	4.66	0.48	4	5			
Learning about referral	COL	13	4.23	0.60	3	5	8.52	0.014	COL < PER
	MEX	21	4.29	0.72	3	5			
	PER	34	4.71	0.46	4	5			
	Total	68	4.49	0.61	3	5			
Role playing for referring patients	COL	13	4.31	0.48	4	5	10.48	0.005	COL < PER, MEX < PER
	MEX	21	4.29	0.64	3	5			
	PER	34	4.74	0.45	4	5			
	Total	68	4.51	0.56	3	5			

**Table S5.** Continued.

		N	M	SD	Min	Max	Kruskal-Wallis H	Sig	Post-hoc	
	Learning about treatment options when referral is not possible	COL	13	4.31	0.48	4	5	15.50	<0.001	COL < PER, MEX < PER
		MEX	21	4.24	0.62	3	5			
		PER	34	4.79	0.41	4	5			
		Total	68	4.53	0.56	3	5			
Booster session	Overall session	COL	36	4.47	0.65	3	5	2.91	0.234	
		MEX	21	4.67	0.66	3	5			
		PER	51	4.69	0.47	4	5			
		Total	108	4.61	0.58	3	5			
	Exchange of experience with other providers	COL	36	4.33	0.79	2	5	1.63	0.443	
		MEX	21	4.52	0.75	3	5			
		PER	51	4.41	0.50	4	5			
		Total	108	4.41	0.66	2	5			
	Getting practical solutions to problems	COL	36	4.31	0.75	3	5	1.59	0.451	
		MEX	21	4.43	0.75	3	5			
		PER	50	4.54	0.50	4	5			
		Total	107	4.44	0.65	3	5			

**Table S6.** Post training questionnaire response - satisfaction with aspects of training, by arm

		N	M	SD	Min	Max	Kruskal-Wallis H	Sig	Post-hoc	
Training 1	Overall experience with the course	Arm 2	111	4.62	0.51	3	5	4.04	0.133	
		Arm 3	96	4.49	0.52	3	5			
		Arm 4	88	4.51	0.53	3	5			
		Total	295	4.55	0.52	3	5			
	Information received before the course	Arm 2	109	4.31	0.66	3	5	4.44	0.109	
		Arm 3	95	4.08	0.78	2	5			
		Arm 4	87	4.25	0.61	3	5			
		Total	291	4.22	0.69	2	5			
	Location	Arm 2	109	4.39	0.71	2	5	4.22	0.121	
		Arm 3	96	4.23	0.72	2	5			
		Arm 4	88	4.42	0.64	3	5			
		Total	293	4.34	0.69	2	5			
	Venue	Arm 2	111	4.40	0.65	2	5	6.00	0.050	Arm 3 < Arm 4. insignificant after adjusting for multiple testing
		Arm 3	96	4.21	0.69	2	5			
		Arm 4	88	4.43	0.62	3	5			
		Total	295	4.35	0.66	2	5			

**Table S6.** Continued.

		N	M	SD	Min	Max	Kruskal-Wallis H	Sig	Post-hoc
Duration	Arm 2	111	4.45	0.53	3	5	10.01	<b>0.007</b>	Arm 3 < Arm 2
	Arm 3	93	4.16	0.63	2	5			
	Arm 4	88	4.30	0.68	3	5			
	Total	292	4.31	0.62	2	5			
Trainer	Arm 2	111	4.74	0.46	3	5	1.49	0.476	
	Arm 3	96	4.69	0.47	4	5			
	Arm 4	88	4.67	0.47	4	5			
	Total	295	4.70	0.47	3	5			
My participation	Arm 2	111	4.21	0.52	3	5	2.64	0.267	
	Arm 3	96	4.20	0.64	3	5			
	Arm 4	88	4.32	0.62	3	5			
	Total	295	4.24	0.59	3	5			
Other participants	Arm 2	109	4.27	0.50	3	5	1.62	0.445	
	Arm 3	91	4.15	0.67	2	5			
	Arm 4	87	4.26	0.64	2	5			
	Total	287	4.23	0.60	2	5			
Training 2	Overall experience with the course	Arm 2							
		Arm 3							
		Arm 4	57	4.54	0.50	4	5		
		Total	57	4.54	0.50	4	5		
	Information received before the course	Arm 2							
		Arm 3							
		Arm 4	57	4.28	0.65	3	5		
		Total	57	4.28	0.65	3	5		
	Location	Arm 2							
		Arm 3							
		Arm 4	56	4.46	0.63	3	5		
		Total	56	4.46	0.63	3	5		
	Venue	Arm 2							
		Arm 3							
		Arm 4	57	4.49	0.57	3	5		
		Total	57	4.49	0.57	3	5		
Duration	Arm 2								
	Arm 3								
	Arm 4	56	4.2	0.86	2	5			
	Total	56	4.2	0.86	2	5			
Trainer	Arm 2								
	Arm 3								
	Arm 4	57	4.63	0.49	4	5			
	Total	57	4.63	0.49	4	5			

**Table S6.** Continued.

		N	M	SD	Min	Max	Kruskal-Wallis H	Sig	Post-hoc
My participation	Arm 2								
	Arm 3								
	Arm 4	57	4.21	0.65	3	5			
	Total	57	4.21	0.65	3	5			
Other participants	Arm 2								
	Arm 3								
	Arm 4	54	4.22	0.60	3	5			
	Total	54	4.22	0.60	3	5			
Booster session	Overall experience	Arm 2	56	4.54	0.63	3	5	1.78	0.410
	Arm 3	19	4.63	0.60	3	5			
	Arm 4	33	4.73	0.45	4	5			
	Total	108	4.61	0.58	3	5			

**Table S7.** Post training questionnaire response – perceived utility of aspects of training, by arm

		N	M	SD	Min	Max	Kruskal-Wallis H	Sig	Post-hoc
Training 1	Overall training 1	Arm 2	109	4.66	0.53	2	5	0.21	0.899
		Arm 3	95	4.63	0.53	3	5		
		Arm 4	82	4.65	0.51	3	5		
		Total	286	4.65	0.52	2	5		
	Information on impact of alcohol and costs of alcohol use	Arm 2	109	4.43	0.66	3	5	3.59	0.166
		Arm 3	95	4.58	0.52	3	5		
		Arm 4	74	4.39	0.64	3	5		
		Total	278	4.47	0.61	3	5		
	Discussion on attitudes to alcohol	Arm 2	110	4.49	0.59	2	5	1.08	0.584
		Arm 3	94	4.48	0.54	3	5		
		Arm 4	74	4.41	0.59	3	5		
		Total	278	4.46	0.57	2	5		
	Phrases to start the discussion with the patient	Arm 2	108	4.49	0.52	3	5	0.22	0.895
Arm 3		94	4.50	0.54	3	5			
Arm 4		74	4.46	0.55	3	5			
Total		276	4.49	0.54	3	5			
Presentation of screening criteria for SCALA	Arm 2	109	4.45	0.55	3	5	0.83	0.661	
	Arm 3	95	4.48	0.56	3	5			
	Arm 4	74	4.53	0.53	3	5			
	Total	278	4.48	0.55	3	5			
Role play to practice screening	Arm 2	110	4.54	0.54	3	5	1.44	0.487	
	Arm 3	94	4.43	0.63	3	5			
	Arm 4	74	4.45	0.06	3	5			
	Total	278	4.47	0.59	3	5			
Presentation of steps of brief intervention	Arm 2	110	4.50	0.57	3	5	1.28	0.526	
	Arm 3	94	4.57	0.58	3	5			
	Arm 4	74	4.57	0.55	3	5			
	Total	278	4.54	0.57	3	5			

Table S7. Continued.

		N	M	SD	Min	Max	Kruskal-Wallis H	Sig	Post-hoc	
	Role play to practice delivering brief intervention	Arm 2	110	4.45	0.57	3	5	0.81	0.668	
		Arm 3	94	4.48	0.65	3	5			
		Arm 4	74	4.49	0.65	3	5			
		Total	278	4.47	0.62	3	5			
Training 2*	Overall training 2	Arm 2								
		Arm 3								
		Arm 4	47	4.66	0.48	4	5			
		Total	47	4.66	0.48	4	5			
	Role playing delivering brief intervention for alcohol with comorbid depressive symptoms	Arm 2						3.97	0.046	
		Arm 3	2	4	0	4	4			
		Arm 4	66	4.68	0.47	4	5			
		Total	68	4.66	0.48	4	5			
	Learning about referral	Arm 2						1.85	0.174	
		Arm 3	2	4	0	4	4			
		Arm 4	66	4.50	0.61	3	5			
		Total	68	4.49	0.61	3	5			
Role playing for referring patients	Arm 2						2.12	0.145		
	Arm 3	2	4	0	4	4				
	Arm 4	66	4.53	0.56	3	5				
	Total	68	4.51	0.56	3	5				
Learning about treatment options when referral is not possible	Arm 2	0					2.26	0.133		
	Arm 3	2	4	0	4	4				
	Arm 4	66	4.55	0.56	3	5				
	Total	68	4.53	0.56	3	5				
Booster session	Overall session	Arm 2	56	4.46	0.60	3	5	8.98	<b>0.011</b>	Arm 2 < Arm 4
		Arm 3	19	4.32	1	1	5			
		Arm 4	33	4.82	0.39	4	5			
		Total	108	4.55	0.66	1	5			
	Exchange of experience with other providers	Arm 2	56	4.30	0.74	2	5	2.04	0.361	
		Arm 3	19	4.47	0.61	3	5			
		Arm 4	33	4.55	0.51	4	5			
		Total	108	4.41	0.66	2	5			
	Getting practical solutions to problems	Arm 2	55	4.36	0.68	3	5	3.70	0.157	
		Arm 3	19	4.32	0.75	3	5			
		Arm 4	33	4.64	0.49	4	5			
		Total	107	4.44	0.65	3	5			

\*in Colombia, some providers from Arm 3 could only attend the training session scheduled for Arm 4

**Table S8.** Summary of open answers to post-training questionnaire; comments regarding training and suggestions for improvements

Short training (Arm 2 and 3)	Long training Arm 4)
<i>Colombia</i>	
<p>Content</p> <ul style="list-style-type: none"> <li>• Present how to deal with difficult patients</li> <li>• More feedback on exercises</li> </ul> <p>Logistics</p> <ul style="list-style-type: none"> <li>• Location of training should be closer to the place of work</li> <li>• Training venue could be more comfortable</li> <li>• Improve punctuality and clarity of timetable</li> </ul>	<p>Content:</p> <ul style="list-style-type: none"> <li>• More videos and examples could be included</li> <li>• Provide more options for patients referral</li> <li>• Have more time (for each topic)</li> </ul> <p>Logistics:</p> <ul style="list-style-type: none"> <li>• Include breakfast</li> </ul>
<i>Mexico</i>	
<p>Content:</p> <ul style="list-style-type: none"> <li>• Compliments on the training, not much to add or improve</li> <li>• Role plays are helpful</li> <li>• Include videos that could be shown also to patients</li> <li>• More realistic examples of patients in the videos</li> <li>• More examples and exercises, more detailed information</li> <li>• More time for the training</li> <li>• More information on Mexican statistics</li> </ul> <p>Logistics:</p> <ul style="list-style-type: none"> <li>• Include coffee and cake</li> </ul>	<p>Content:</p> <ul style="list-style-type: none"> <li>• Session 1: clear presentation <ul style="list-style-type: none"> <li>• Could present more clinical cases and how to deal with them in practice</li> <li>• Some more time would be useful</li> </ul> </li> <li>• Session 2: at times too much information, too repetitive and tedious – could be shorter, with less examples and role-play <ul style="list-style-type: none"> <li>• Having contact person in case of doubts when implementing in practice</li> <li>• More information on complications of alcohol dependence, how to approach a resistant patient</li> </ul> </li> </ul> <p>Logistics:</p> <ul style="list-style-type: none"> <li>• Include snack</li> </ul> <p>Other:</p> <ul style="list-style-type: none"> <li>• Include other providers in the training</li> </ul>
<i>Peru</i>	
<p>Content:</p> <ul style="list-style-type: none"> <li>• Compliments on the training</li> <li>• Relevant and important (although often forgotten) topic of the training</li> <li>• More practice (also in front of other providers), individualized feedback</li> <li>• More videos, videos reflecting more closely the reality of own PHCC</li> <li>• More similar trainings/longer training</li> <li>• More scientific evidence on alcohol abuse in the country</li> </ul> <p>Logistics:</p> <ul style="list-style-type: none"> <li>• Previous announcement of the training</li> <li>• Having more dates to choose from (to adapt to schedule)</li> <li>• Not everyone is finished with their consultations at the same time</li> <li>• Having training scheduled earlier in the day</li> <li>• More suitable venue</li> </ul> <p>Other:</p> <ul style="list-style-type: none"> <li>• Involve more other providers</li> <li>• Communicate with managers to facilitate having more time to work with patients</li> <li>• Establish WhatsApp group with participating providers to share ideas</li> </ul>	<p>Content:</p> <ul style="list-style-type: none"> <li>• Role plays are helpful</li> <li>• More examples and more practice</li> <li>• More videos</li> <li>• Longer training</li> <li>• More similar trainings/longer training</li> </ul> <p>Logistics:</p> <ul style="list-style-type: none"> <li>• Previous announcement of the training</li> <li>• Change the scheduling, having more dates to choose from</li> <li>• More suitable venue</li> </ul> <p>Other:</p> <ul style="list-style-type: none"> <li>• Appreciation to be able to meet providers who are interested in the topic and speak the same language</li> <li>• Involve more other providers from the centre (make it obligatory)</li> </ul>

**Table S9.** Relationship between implementation factors and outcome; comparison between screeners and non-screeners overall and by country

SCALA protocol delivery	Total										Colombia					Mexico					Peru				
	N	M (SD) / %	M-W U / Chi square	Sig.	N	M (SD) / %	M-W U / Chi square	Sig.	N	M (SD) / %	M-W U / Chi square	Sig.	N	M (SD) / %	M-W U / Chi square	Sig.	N	M (SD) / %	M-W U / Chi square	Sig.					
																					Arm 2.	Arm 3.	Arm 4.	Arm 2.	Arm 3.
Arm (short vs. long training)	No	179	43.0% Arm 2. 29.1% Arm 3. 27.9% Arm 4.	0.869	0.648	16	50.0% Arm 2. 25.0% Arm 3. 25.0% Arm 4.	0.490	0.783	66	31.8% Arm 2. 40.0% Arm 3. 27.3% Arm 4.	1.032	49.5% Arm 2. 21.6% Arm 3. 28.9% Arm 4.	1.013	0.603										
	Yes	173	38.2% Arm 2. 31.2% Arm 3. 30.6% Arm 4.			51	41.2% Arm 2. 33.3% Arm 3. 25.5% Arm 4.			73	34.2% Arm 2. 32.9% Arm 3. 32.9% Arm 4.		40.8% Arm 2. 26.5% Arm 3. 32.7% Arm 4.												
Dose (hours of session participated)	No	179	2.52 (1.18)	18171.5	<b>0.003</b>	16	2.28 (0.84)	517.0	0.094	66	2.03 (0.70)	3016.5	2.89 (1.35)	2885.0	<b>0.016</b>										
	Yes	173	2.82 (1.13)			51	2.84 (0.98)			73	2.43 (0.88)		3.39 (1.37)												
Dose (Numbers of sessions participated)	No	179	1.36 (0.59)	18829.5	< <b>0.001</b>	16	1.25 (0.45)	546.0	<b>0.019</b>	66	1.26 (0.44)	2936.0	1.44 (0.68)	2885.0	<b>0.016</b>										
	Yes	173	1.58 (0.60)			51	1.59 (0.50)			73	1.51 (0.48)		1.69 (0.68)												
Participation in 1st training *	No	179	86.6% attending T1 13.4% not attending T1	0.274	0.600	16	62.5% attending T1 37.5% not attending T1	6.808	<b>0.009</b>	66	75.8% attending T1 24.2% not attending T1	1.864	0.172	97	97.9% attending T1 2.1% not attending T1	3.075	0.079								
	Yes	173	88.4% attending T1 11.6% not attending T1			51	90.2% attending T1 9.8% not attending T1			73	84.9% attending T1 15.1% not attending T1		91.8% attending T1 8.2% not attending T1												
Participation in 2nd training**	No	46	71.7% attending T2 28.3% not attending T2	4.498	<b>0.034</b>		88.9% attending T2 11.1% not attending T2			18	88.9% attending T2 11.1% not attending T2	0.092	0.762	28	60.7% attending T2 39.3% not attending T2	3.509	0.061								
	Yes	40	90.0% attending T2 10.0% not attending T2			24	91.7% attending T2 8.3% not attending T2			24	91.7% attending T2 8.3% not attending T2		87.5% attending T2 12.5% not attending T2												



Participation in booster session*	No	179	30.7% attending B 69.3% not attending B	12.443	<0.001	16	62.5% attending B 37.5% not attending B	0.207	0.649	66	25.8% attending B 74.2% not attending B	1.577	0.209	97	28.9% attending B 71.1% not attending B	5.743	0.017
	Yes	173	49.1% attending B 50.9% not attending B	51	68.6% attending B 31.4% not attending B	73	35.6% attending B 64.4% not attending B	49	49.0% attending B 51.0% not attending B								

\* all providers who attended at least one training (N=352) \*\*only providers from Arm 4 in Mexico and Peru who attended at least one training (N=86)

**Table S10.** Relationship between mechanisms of impact-participant response and outcome; comparison between screeners and non-screeners overall and by country

	Satisfaction	Total	Colombia			Mexico			Peru								
			N	M (SD)	Sig.	M-W U	N	M (SD)	Sig.	M-W U	N	M (SD)	Sig.	M-W U			
Overall experience with the course	No	145	4.52 (0.53)	10050.0	0.453	7	4.14 (0.69)	92.0	0.143	49	4.71 (0.46)	1260.0	0.068	89	4.45 (0.52)	1582.5	0.023
	Yes	145	4.57 (0.51)			38	4.53 (0.51)			62	4.53 (0.53)			45	4.67 (0.48)		
Information received before the course	No	143	4.20 (0.76)	10086.0	0.828	7	3.71 (0.95)	94.5	0.163	49	4.33 (0.77)	1462.0	0.829	87	4.17 (0.72)	1785.5	0.492
	Yes	143	4.25 (0.62)			38	4.08 (0.54)			61	4.34 (0.63)			44	4.27 (0.66)		
Location	No	144	4.43 (0.70)	8881.0	0.020	7	3.86 (1.07)	127.0	0.831	49	4.59 (0.61)	1264.0	0.115	88	4.39 (0.69)	1806.5	0.358
	Yes	144	4.26 (0.69)			38	4.00 (0.74)			61	4.39 (0.69)			45	4.31 (0.60)		
Venue	No	145	4.43 (0.63)	9105.0	0.029	7	3.86 (1.07)	133.0	1.000	49	4.63 (0.49)	1297.0	0.130	89	4.37 (0.63)	1892.0	0.564
	Yes	145	4.26 (0.69)			38	3.95 (0.66)			62	4.44 (0.64)			45	4.29 (0.69)		
Duration	No	144	4.38 (0.62)	9192.5	0.077	7	4.14 (0.69)	131.5	0.958	49	4.41 (0.64)	1317.0	0.233	88	4.38 (0.61)	1809.0	0.485
	Yes	143	4.25 (0.62)			38	4.16 (0.64)			61	4.28 (0.61)			44	4.3 (0.63)		
Trainer	No	145	4.70 (0.48)	10347.0	0.768	7	4.57 (0.53)	128.5	0.868	49	4.84 (0.37)	1424.0	0.414	89	4.63 (0.51)	1810.5	0.267
	Yes	145	4.72 (0.45)			38	4.61 (0.50)			62	4.77 (0.42)			45	4.73 (0.45)		
My participation	No	145	4.25 (0.61)	10344.5	0.787	7	4.14 (0.9)	128.5	0.872	49	4.39 (0.67)	1329.5	0.210	89	4.18 (0.53)	1807.0	0.266
	Yes	145	4.23 (0.58)			38	4.13 (0.58)			62	4.26 (0.60)			45	4.29 (0.55)		

Table S10. Continued.

	Total										Colombia				Mexico				Peru			
	SCALA protocol delivery		N M (SD)		M-W U	Sig.	N M (SD)		M-W U	Sig.	N M (SD)		M-W U	Sig.	N M (SD)		M-W U	Sig.				
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes				
Other participants	141	141	4.30 (0.58)	4.16 (0.62)	8893.5	0.077	7	4.00 (0.82)	118.0	0.579	48	4.40 (0.71)	1114.5	<b>0.038</b>	86	4.27 (0.47)	1834.0	0.720				
Training session 2	No	Yes	27	30	4.59 (0.50)	4.50 (0.51)	367.5	0.487	9	4.56 (0.53)	43.5	0.080	18	4.61 (0.50)	109.5	0.247						
Information received before the course	No	Yes	27	30	4.33 (0.62)	4.23 (0.68)	375.5	0.600	9	4.56 (0.53)	53.0	0.336	18	4.22 (0.65)	133.0	0.936						
Location	No	Yes	27	29	4.41 (0.64)	4.52 (0.63)	352.5	0.471	9	4.44 (0.73)	65.5	0.894	18	4.39 (0.61)	98.5	0.233						
Venue	No	Yes	27	30	4.44 (0.58)	4.53 (0.57)	371.0	0.536	9	4.44 (0.53)	64.0	0.813	18	4.44 (0.62)	118.5	0.494						
Duration	No	Yes	27	29	4.30 (0.78)	4.10 (0.94)	353.0	0.496	9	4.11 (1.05)	49.0	0.358	18	4.39 (0.61)	124.5	0.670						
Trainer	No	Yes	27	30	4.56 (0.51)	4.70 (0.47)	346.5	0.263	9	4.67 (0.50)	63.0	0.749	18	4.50 (0.51)	94.5	0.079						
My participation	No	Yes	27	30	4.11 (0.64)	4.30 (0.65)	342.0	0.260	9	3.89 (0.6)	54.5	0.391	18	4.22 (0.65)	109.0	0.286						
Other participants	No	Yes	25	29	4.12 (0.53)	4.31 (0.66)	298.0	0.199	8	4.00 (0.53)	49.5	0.456	17	4.18 (0.53)	92.0	0.200						
Booster session	No	Yes	41	63	4.51 (0.78)	4.56 (0.59)	1285.5	0.963	9	4.33 (0.71)	109	0.737	5	4.60 (0.55)	30.5	0.812	27	4.56 (0.85)	320.0	0.927		
Practical utility																						
Training session 1	No	Yes	141	140	4.63 (0.55)	4.66 (0.49)	9707.5	0.771	7	4.57 (0.53)	126.5	0.810	46	4.76 (0.48)	1123.5	0.118	88	4.57 (0.58)	1665.5	0.071		
Information on impact of alcohol and costs of alcohol use	No	Yes	135	138	4.43 (0.65)	4.51 (0.57)	8867.0	0.438	7	4.71 (0.49)	101.5	0.265	41	4.59 (0.59)	1091.5	0.754	87	4.33 (0.68)	1734.0	0.233		



Table S10. Continued.

	Total					Colombia					Mexico					Peru						
	SCALA protocol delivery	N	M (SD)	M-W U	Sig.	N	M (SD)	M-W U	Sig.	N	M (SD)	M-W U	Sig.	N	M (SD)	M-W U	Sig.	N	M (SD)	M-W U	Sig.	
Learning about treatment options when referral is not possible	No	34	4.53 (0.56)	578.0	1.000	3	4.67 (0.58)	8.0	0.140	12	4.33 (0.65)	43.5	0.397	19	4.63 (0.50)	90.0	<b>0.009</b>					
	Yes	34	4.53 (0.56)			10	4.20 (0.42)			9	4.11 (0.60)			15	5.00 (0.00)							
Booster session	No	41	4.54 (0.60)	1152.0	0.265	9	4.22 (0.83)	89.5	0.238	5	4.80 (0.45)	28.0	0.573	27	4.59 (0.50)	259.5	0.130					
	Yes	63	4.65 (0.57)			26	4.58 (0.58)			13	4.54 (0.78)			24	4.79 (0.41)							
Exchange of experience with other providers	No	41	4.22 (0.61)	948.5	<b>0.011</b>	9	4.00 (0.87)	79.5	0.119	5	4.40 (0.89)	31.5	0.910	27	4.26 (0.45)	219.0	<b>0.020</b>					
	Yes	63	4.51 (0.67)			26	4.46 (0.76)			13	4.46 (0.78)			24	4.58 (0.50)							
Practical solutions	No	41	4.34 (0.62)	1093	0.180	9	4.22 (0.83)	107.5	0.696	5	4.20 (0.84)	28.0	0.628	27	4.41 (0.50)	221.0	<b>0.044</b>					
	Yes	62	4.48 (0.67)			26	4.35 (0.75)			13	4.38 (0.77)			23	4.70 (0.47)							

\* all providers who attended at least one training (N=352)

**Table S11.** Relationship between contextual factors and outcome; comparison between screeners and non-screeners overall and by country

SCALA protocol delivery	Total						Colombia			Mexico			Peru				
	N	M (SD) / %	M-W U / Chi square	Sig.	N	M (SD)	M-W U / Chi square	Sig.	N	M (SD)	M-W U / Chi square	Sig.	N	M (SD)	M-W U / Chi square	Sig.	
Age	No	175	39.57 (12.44)	13473	0.130	14	31.36 (7.43)	328.0	0.720	64	34.72 (13.51)	2027.0	0.280	97	43.96 (10.41)	2192.0	0.444
	Yes	170	37.79 (12.5)		50	32.38 (10.48)		71	36.38 (12.44)		49	45.35 (10.99)					
Gender	No	179	75.3% female, 24.6% male	0.337	0.562	16	81.3% female, 18.8% male	0.304	0.581	66	51.9% female, 40.9% male	4.975	<b>0.026</b>	97	85.6% female, 14.4% male	0.091	0.763
	Yes	173	78.0% female, 22.0% male		51	74.5% female, 25.5% male		73	76.7% female, 23.3% male		49	83.7% female, 16.3% male					
Profession	No	178	32.0% doctors, 14.6% nurses, 5.6% psychologists, 47.8% others	19.209	< <b>0.001</b>	16	12.5% doctors, 18.8% nurses, 0% psychologists, 68.8% others	14.531	<b>0.002</b>	65	52.3% doctors, 10.8% nurses, 7.7% psychologists, 29.2% others	3.530	0.317	97	21.6% doctors, 16.5% nurses, 5.2% psychologists, 56.7% others	19.638	< <b>0.001</b>
	Yes	172	45.9% doctors, 12.8% nurses, 13.4% psychologists, 27.9% others		51	52.9% doctors, 25.5% nurses, 2.0% psychologists, 19.6% others		72	65.3% doctors, 6.9% nurses, 9.7% psychologists, 18.1% others		49	10.2% doctors, 8.2% nurses, 30.6% psychologists, 51.0% others					





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## CHAPTER 5

### Motivational and organizational factors associated with primary health care providers' alcohol screening behaviour in Colombia, Mexico and Peru

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#### Chapter published as:

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## ABSTRACT

*Background:* Screening for unhealthy alcohol use in routine consultations can aid primary health care (PHC) providers in detecting patients with hazardous or harmful consumption and providing them with appropriate care. As part of larger trial testing strategies to improve implementation of alcohol screening in PHC, this study investigated the motivational (role security, therapeutic commitment, self-efficacy) and organizational context (leadership, work culture, resources, monitoring, community engagement) factors that were associated with the proportion of adult patients screened with AUDIT-C by PHC providers in Colombia, Mexico and Peru. Additionally, the study investigated whether the effect of the factors interacted with implementation strategies and the country.

*Methods:* Pen-and-paper questionnaires were completed by 386 providers at the start of their study participation (79% female,  $M_{\text{age}}=39.5$ , 37.6% doctors, 15.0% nurses, 9.6% psychologists, 37.8% other professional roles). They were allocated to one of four intervention arms: control group; short training only; short training in presence of community support; and standard (long) training in presence of community support. Providers documented their screening practice during the five-month implementation period. Data were collected between April 2019 and March 2020.

*Results:* Negative binomial regression analysis found an inverse relationship of role security with the proportion of screened patients. Self-efficacy was associated with an increase in the proportion of screened patients only amongst Mexican providers. Support from leadership (formal leader in organization) was the only significant organizational context factor, but only in non-control arms.

*Conclusion:* Higher self-efficacy is a relevant factor in settings where screening practice is already ongoing. Leadership support can enhance effects of implementation strategies.

## BACKGROUND

Alcohol use is amongst the ten leading risk factors for mortality and morbidity (GBD 2016 Alcohol Collaborators, 2018; Rehm & Imtiaz, 2016), causing about three million deaths annually (Shield et al., 2020). Alcohol consumption increases the risk of alcohol use disorders (Grant et al., 2015), liver disease (Rehm et al., 2010), cancer (Bagnardi et al., 2015), tuberculosis (Imtiaz et al., 2017), depression (Boden & Fergusson, 2011), non-ischaemic cardiovascular disease (Rehm & Roerecke, 2017), and heavy drinking occasions (drinking 60+ grams of pure alcohol on one occasion) increase the risk of ischaemic cardiovascular disease (Roerecke & Rehm, 2014). In Latin America, alcohol is the fourth leading risk factor for morbidity (Murray et al., 2020), necessitating the implementation of effective interventions to reduce consumption. Primary health care (PHC) providers play an important role in reducing consumption, as they can detect heavy drinkers through their regular contact with the general population, and because of their opportunity to establish long term, positive therapeutic relationships

with patients. Screening for unhealthy alcohol use with a validated instrument (such as AUDIT (Babor et al., 2001)) during the consultation, and providing patients with brief advice or motivational interviewing-based intervention for hazardous or harmful alcohol use, has a large and robust evidence base for effectiveness in PHC (Joseph & Basu, 2017; Kaner et al., 2018). Despite this evidence, screening and brief intervention are often not optimally implemented in routine practice (O'Donnell, Wallace, et al., 2014), and providers often cite lack of time, resources and training as barriers to implementation (Rosário et al., 2021).

Previous studies have sought to identify implementation strategies that could help to address those barriers and increase rates of alcohol screening in PHC, such as training, community support and financial reimbursement (Heather et al., 2006, Anderson et al., 2016). Building on existing evidence, the SCALA study seeks to test whether training and community support could scale-up PHC-based screening, intervention and treatment for heavy drinking and comorbid depression in three upper-middle income Latin American countries: Colombia, Mexico and Peru (Jane-Llopis et al., 2020). The results of the SCALA outcome evaluation at the primary health care centre (PHCC) level suggest that the training of providers significantly increased the proportion of adult patients screened with AUDIT-C, whilst community support did not increase the screening rates (Anderson et al., 2021). The latter might have been impacted by the need for an early pause of implementation due to the COVID-19 pandemic in Latin America. Here, we report the findings of process evaluation that aims to identify which baseline contextual (non-intervention) factors were associated with providers' alcohol screening practice. In this paper, we focus on individual motivational and organizational context factors, listed and defined in in Table 1.

There is general theoretical support for the influence of the motivational factors on behaviour (Fishbein & Ajzen, 2011). Negative provider attitudes and low self-efficacy are commonly identified as barriers to undertaking alcohol screening in practice (Derges et al., 2017; Johnson et al., 2011). Previous studies of attitudes, such as role security and therapeutic commitment to working with drinkers, reveal mixed findings, including positive associations (Anderson et al., 2003; Anderson et al., 2014) but also no relationship (Bendtsen et al., 2015; Keurhorst, Anderson, et al., 2016). Self-efficacy has previously been found to be related to providers' alcohol screening behaviour (Ozer et al., 2004). organizational context, including factors such as organizational support, resources, leadership, social relations and support, and organizational culture are also considered important (Damschroder et al., 2009; Flottorp et al., 2013; Nilsen & Bernhardsson, 2019). There is limited research on the influence of organizational context on PHC providers' alcohol screening behaviour, although factors such as lack of organizational support and supportive organizational culture are often cited as barriers in qualitative studies (Derges et al., 2017; Johnson et al., 2011), including within Latin American settings (Amaral et al., 2010). In our study, we focused on five organizational contextual factors: leadership, work culture, resources, monitoring and community engagement.

**Table 1.** Scale definitions

<b>Construct</b>	<b>Definition</b>
<b>Role security<sup>1</sup></b>	Individual's perceptions of the adequacy of their skills and knowledge in relation to problem drinkers and how appropriate it is for them to engage in work with such clients.
<b>Therapeutic commitment<sup>1</sup></b>	Degree to which individual seeks to engage drinkers in treatment or therapy and the extent to which they find such work rewarding both at a professional and personal level.
<b>Self-efficacy (alcohol screening domain specific)<sup>2</sup></b>	Individual's belief in own capability to perform behaviours necessary to perform alcohol screening.
<b>Organizational resources<sup>3</sup></b>	The availability of human resources to deliver alcohol screening.
<b>Community engagement<sup>3</sup></b>	The mutual communication, deliberation and activities that occur between community members and an organization with regard to alcohol screening.
<b>Monitoring services for action<sup>3</sup></b>	The process of using locally derived data to assess screening performance and plan how to improve outcomes in an organization.
<b>Work culture<sup>3</sup></b>	The way 'we do things' in an organization (unit) reflecting a supportive work culture for alcohol screening implementation.
<b>Leadership<sup>3</sup></b>	The actions of a formal leader in an organization (unit) to influence change and excellence in screening practice achieved through clarity and engagement.

<sup>1</sup>definition from Gorman & Cartwright, 1991

<sup>2</sup>definition adapted to the field of alcohol screening from Bandura, 1977

<sup>3</sup>definition adapted to the field of alcohol screening from Bergström et al., 2015

Beyond assessing the relationship between baseline contextual factors and alcohol screening behaviour, we recognize that their effect might be intervention dependent, that is only relevant for providers who receive certain implementation strategies, such as training on how to conduct screening, or activities at municipal level aimed at normalizing screening practice; or country dependent - differing between the three participating countries. The purpose of this study is thus to describe and compare the baseline motivational (attitudes, self-efficacy) and organizational context factors among the PHC providers in Colombia, Mexico and Peru, and explore if any of them are associated with the proportion of screened patients. Further, we investigate whether their effects differ based on study arm or country.

## METHODOLOGY

### Design

For the current study, we combined baseline provider questionnaire data with outcome data on provider screening behaviour during the five-month study period. The longitudinal study was conducted as part of larger quasi-experimental trial (SCALA study), analysing effects of different implementation strategies (clinical package, training and community support) on the screening for hazardous or harmful alcohol consumption and comorbid depression in 58 PHCCs based in Colombia, Mexico and Peru (details available in full study protocol (Jane-Llopis et al., 2020), with short summary of study arms presented in Table 2).

**Table 2.** Overview of implementation strategies and study arms

Implementation strategy	Arm 1	Arm 2	Arm 3	Arm 4	Explanation
<i>Clinical package</i>	/	Short	Short	Standard	The clinical package consists of a care pathway for measuring heavy drinking (using AUDIT/-C) and comorbid depression (using PHQ2/9), provider and patient booklets on alcohol and depression, as well as patient leaflets on alcohol and depression. The main difference between short and standard clinical package is the complexity of the care pathway, length of the provider booklet, and extent of alcohol intervention.
<i>Training</i>	/	Short	Short	Standard	Training sessions consist of didactic input, guided discussions, skills and practice modelled through videos and role-playing. The main difference between short and standard training is in the length (2 vs. 4 hours) and content of the training (on short or standard clinical package). In all training arms, extra booster session is organized in the first months of the implementation period.
<i>Community support</i>	/	/	Present	Present	Community support activities are comprised of establishment of Community Advisory Boards of local stakeholders, identification of a local project champion, implementation of locally chosen adoption mechanisms and support systems, as well as implementation of media campaign.

## Participants

Local researchers recruited PHCCs located in the selected intervention and control municipalities. Recruitment strategies within the PHCC varied by country. In Colombia, PHCC enrolment automatically included all providers in the study unless they opted out. In Peru, providers from participating PHCCs were asked to volunteer to participate. In Mexico, providers were in most cases selected and encouraged to enrol by their superior, but were free to decline. Any provider working with patients in a recruited PHCC was eligible to participate in the SCALA study upon signature of an informed consent form. To be included in analysis for this paper, providers had to complete the questionnaire during the baseline period and have available outcome data in at least one of the five months of the implementation period.

## Data collection

The data were collected between April 2019 and March 2020. During a one-month baseline period (taking place between April-August 2019, depending on the PHCC), providers completed a 20-min baseline questionnaire and documented their regular screening activity by completing tally sheets for each time they screened patients using AUDIT-C. During the five-month implementation period (starting September-November 2019 and ending January-March 2020), providers returned completed tally sheets and provided information on the number of adult patient consultations. All data were collected in Spanish language and in paper format. Local research teams that visited

the centres on a monthly basis collected the tally sheets and transferred data to the data management centre in electronic format using secure encryption protocols.

## Measurements

*Predictors:* Role security and therapeutic commitment were measured by the 10-item Short Alcohol and Alcohol Problems Perception Questionnaire (SAAPPQ) on a 7-point Likert scale (1=Strongly disagree to 7=Strongly agree), with 4 considered a neutral score on both scales (Anderson & Clement, 1987, Gorman & Cartwright, 1991). Reliability of the scales, using Cronbach's alpha, was 0.67 for role security (four items) and 0.69 for therapeutic commitment (six items). Self-efficacy was measured with five items specifically developed for this study on a 5-point Likert scale ranging from 1=Very difficult to 5=Very easy ( $\alpha = 0.76$ ). Organizational context was assessed using an adapted version of the Context Assessment for Community Health (COACH) tool (Bergström et al., 2015), developed specifically for use in low and middle-income countries. Whilst the original validated tool measures the overall organizational context in the PHCC using eight dimensions (organizational resources, Community engagement, Monitoring services for action, Sources of knowledge, Commitment to work, Work culture, Leadership, Informal payment), we selected ten items considered most relevant to assess the organizational context in our study, and slightly adapted the selected questions to reflect organizational context related to alcohol prevention activities. Dimensions of Leadership ( $\alpha=0.85$ ), Work Culture ( $\alpha=0.73$ ), Resources ( $\alpha=0.93$ ), Monitoring ( $\alpha=0.77$ ) and Community engagement ( $\alpha=0.69$ ) were thus assessed. Each scale consisted of two questions with answers on a 5-point Likert scale (1=Completely disagree to 5=Completely agree). For role security and therapeutic commitment, the negatively worded items were reverse coded (Anderson & Clement, 1987). For all scales, any missing values on items were assigned the mean value of the remaining items of the scale for that participant (5.7% participants had a missing value on one item and 0.5% on two items). The scores for all items of the scale were then summed up and divided by the number of items to obtain the participant's score. The complete list of the used items is available in the Appendix 2.

*Outcome variable:* Proportion of consulting patients who were screened with AUDIT-C by the health care professional (alcohol screening proportion): During the 5-month implementation period, providers were asked to screen all adult patients who consulted for any reason, using AUDIT-C (Babor et al., 2001). For each provider, the proportion was calculated as the total number of completed tally sheets (representing cases of screening), divided by the total number of adult consultations with the provider during the 5-month implementation period, multiplied by 100, and rounded to the nearest integer.

*Covariates:* Baseline proportion of consulting patients who were screened with AUDIT-C by the health care professional was calculated in the same manner as described above, but only for the screening done during the one-month baseline period. Arm indicates the combination of implementation strategies received by the provider, as described in Table 2 (1=Arm 1, 2=Arm 2, 3=Arm 3, 4=Arm 4). For demographics, provider data

was collected on age, gender (1=female, 2=male), country (1=Colombia, 2=Mexico, 3=Peru) and professional role (1=doctor, 2=nurse, 3=psychologist, 4=other staff (e.g. social worker, midwife, nurse technician)).

## Data analysis

First, the reliability of the scales and sample characteristics were calculated, and we compared the study sample with the rest of providers participating in SCALA who did not meet the eligibility criteria described in the Participants section. Second, descriptive statistics (mean (M), standard deviation (SD), percent (%)) and simple Pearson correlations for the main predictor variables were calculated. The Kolmogorov-Smirnov test found a non-normal distribution for the predictor variables. Thus, comparisons by country and arm were made with the non-parametric Kruskal Wallis H test, with post-hoc analyses adjusted for multiple testing with the Bonferroni correction.

Next, the distribution of the outcome variable was checked, and found to be best described by a negative binomial distribution (Appendix Figure A1), which is a discrete probability distribution with lower bound at 0, and variance much larger than mean, suggesting the presence of overdispersion (Green, 2020). To avoid losing information by dichotomizing the data or using non-parametric tests, a generalized linear model (GLM) for a negative binomial distribution with a log link function was chosen for data analysis. Due to the data structure (providers nested in PHCCs and PHCCs within country), generalized linear mixed models were initially used to test for the inclusion of random effects. Models with country as a fixed effect and a random intercept varying at the PHCC level indicated redundancy of the variances of the random effect, with a better fit of the model without the random effects. Thus a GLM was used.

Overall, we estimated six models: Model 1 included only covariates; Model 2 added the predictors; Model 3 included predictors' interactions with country and with arm; and, Model 4 removed all non-significant interactions and non-significant main effects, provided they were not part of significant interactions (all where  $p \geq 0.05$ ). We repeated this process in Models 5 and 6 until only significant main effects and non-significant main effects with significant interaction remained in the model. The likelihood ratio chi square test was used to assess improvement in model fit between the models, with the value calculated by the formula  $LR=2*(\ln L1-\ln L2)$ . In the results section, only the final model is presented with incident rate ratios (IRR) and the corresponding 95% confidence intervals (CI). The results of the other models are available in the Supplementary material Table 2 and Table 3.

All analyses were conducted in IBM SPSS 26. In statistical testing, a significance level of 5% was used.

## Ethics

The Ethics Committee of the Technical University of Dresden gave final ethical approval for the project on 12 April 2019, EK90032018. In addition, the appropriate ethics boards in Colombia, Mexico, and Peru have approved the study. All participating PHC providers have signed an informed consent form for participation.

## RESULTS

### Characteristics of the sample

In total, 386 providers (62.1% of all participating in SCALA) were included in the sample (Table 3). Remaining providers were excluded due to: 192 (30.9%) not completing the baseline questionnaire; 12 (1.9%) missing questionnaire data; and 32 (5.1%) missing outcome data on screenings during the implementation phase. Comparison with the excluded providers found that those eligible for inclusion differed in country distribution (a smaller proportion of Mexican respondents among the included providers) ( $\chi^2=47.91$ ,  $p<0.001$ ), arm distribution (a larger proportion of participants in arm 1) ( $\chi^2=38.86$ ,  $p<0.001$ ) and gender distribution (a larger proportion of females) ( $\chi^2=8.42$ ,  $p=0.004$ ). There was no difference in age ( $t=-1.48$ ,  $p=0.139$ ) or professional role ( $\chi^2=6.58$ ,  $p=0.089$ ).

**Table 3.** Sample characteristics description, overall and by country

	Overall (N=386)	Colombia (N=111)	Mexico (N=129)	Peru (N=146)
	M (SD) / %	M (SD) / %	M (SD) / %	M (SD) / %
Country				
Colombia	28.8			
Mexico	33.4			
Peru	37.8			
Gender				
Female	79.0	82.0	68.2	86.3
Male	21.0	18.0	31.8	13.7
Profession				
Doctor	37.6	36.9	62.8	15.8
Nurse	15.0	21.6	10.9	13.7
Psychologist	9.6	1.8	10.1	15.1
Other <sup>a</sup>	37.8	39.6	16.3	55.5
Age	39.47 (12.32)	32.47 (10.08)	38.54 (12.48)	45.61 (10.61)
Arm				
1 – control	26.2	42.3	23.3	16.4
2 – short training only	31.1	24.3	27.1	42.5
3 – short training + community support	24.1	20.7	31.0	20.5
4 – standard training + community support	17.6	12.6	18.6	20.5
Did screening in baseline period	26.4	11.4	58.9	6.8
Screening proportion percentage in baseline period	7.61 (22.63)	1.93 (7.41)	19.82 (35.03)	1.14 (5.94)
Did screening in implementation period	45.3	43.2	53.5	34.2

**Table 3.** Continued.

	Overall (N=386)	Colombia (N=111)	Mexico (N=129)	Peru (N=146)
	M (SD) / %	M (SD) / %	M (SD) / %	M (SD) / %
Screening proportion percentage in implementation period	4.69 (12.40)	3.58 (7.98)	7.41(18.64)	3.15 (6.59)
Average N of months participating during implementation period <sup>b</sup>	4.43 (1.26)	4.55 (0.89)	4.11 (1.60)	4.61 (1.10)
Participation <sup>c</sup>				
Obligatory	40.2		7.0	
Voluntary	41.2		37.2	
Selected by superior	18.7	100.0	55.8	100.0
Working in centre with existing screening practice	34.7	5.4	99.2	0.0

<sup>a</sup>e.g. social worker, midwife, nurse technician, dentist etc.

<sup>b</sup>in range: 1-5 months

<sup>c</sup>Obligatory: all providers in the centre were enrolled unless they opted out; voluntary: providers had to volunteer; selected by superior: only some providers in the centre were selected for participation by their superior

**Table 4.** Comparison of motivational and organizational predictors by country

	Overall	Colombia (N=111)	Mexico (N=129)	Peru (N=146)	Kruskal Wallis	
	M(SD)	M (SD)	M (SD)	M (SD)	Test statistic	Post hoc (significant only) <sup>a</sup>
Role security	5.13 (0.95)	5.14 (1.07)	5.34 (0.97)	4.93 (0.78)	17.56***	P<M
Therapeutic commitment	4.80 (0.86)	4.31 (0.82)	4.70 (0.89)	5.26 (0.60)	88.74***	C<M C<P M<P
Self-efficacy	3.30 (0.72)	3.26 (0.76)	3.52 (0.75)	3.14 (0.61)	24.35***	P<M C<M
Leadership	3.14 (1.10)	3.29 (1.10)	3.64 (0.94)	2.58 (0.97)	70.05***	P<C P<M
Work culture	3.89 (0.81)	3.54 (0.94)	3.90 (0.82)	4.15 (0.56)	32.30***	C<M C<P M<P
Resources	2.81 (1.12)	2.90 (1.17)	3.11 (1.08)	2.48 (1.02)	20.93***	P<C P<M
Monitoring	2.27 (0.96)	2.17 (1.00)	2.49 (1.02)	2.13 (0.83)	9.93**	P<M C<M
Community engagement	2.46 (0.97)	2.33 (0.96)	2.85 (0.96)	2.22 (0.90)	28.71***	P<M C<M

<sup>a</sup>C=Colombia, M=Mexico, P=Peru. Bonferroni correction was applied to adjust the significance values for multiple testing \*p£0,05 \*\*p£0,01 \*\*\*p£0,001

## Country and arm comparisons of predictor variables

There were significant differences between countries for all the predictors (Table 4). In most predictors, Mexican providers had the highest mean scores, with the exception of therapeutic commitment and work culture, where the Peruvian providers scored highest. Comparison of predictor variables was made also by arm, and no differences were found



in all predictors except for therapeutic commitment, with post-hoc testing showing that providers from Arm 1 had significantly lower therapeutic commitment than providers from Arm 4 ( $M(SD)_{\text{Arm1}} = 4.58(0.86)$ ,  $M(SD)_{\text{Arm4}} = 5.08(0.72)$ ;  $p < 0.001$ ). Simple Pearson correlations between scales' constructs are available in Supplementary material Table 1.

## Predictors of alcohol screening

Next, we examined the fit of the tested models to predict the alcohol screening proportion. Table 5 presents the log likelihood values for all models, and the calculated likelihood ratio chi square values for selected models' comparisons. Only Models 4, 5 and 6 significantly improved the fit compared to Model 1. Those three models were then compared to each other, and the larger models (4 and 5) did not have a significantly better fit than Model 6. Model 6 was thus selected as the final best fitting model. Full results for all the models are available in in Table 2 and 3 of the Supplementary material.

**Table 5.** Model specification and fit comparison

	Variables in the model <sup>a</sup>	Log likelihood	Likelihood ratio chi square <sup>b</sup>	df	Likelihood ratio chi square <sup>c</sup>	df
Model 1	Baseline alcohol screening, arm, age, sex, country	-732.75	64.06	11		
Model 2	Baseline alcohol screening, arm, age, sex, country, RS, TC, SE, LE, WC, RE, MO, CE	-727.57	10.35	8		
Model 3	Baseline alcohol screening, arm, age, sex, country, RS, TC, SE, LE, WC, <i>RE, MO, CE, RS*country, TC*country, SE*country, LE*country, WC*country, RE*country, MO*country, CE*country, RS*arm, TC*arm, SE*arm, LE*arm, WC*arm, RE*arm, MO*arm, CE*arm</i>	-702.42	60.66	48		
Model 4	Baseline alcohol screening, arm, age, sex, country, RS, TC, SE, LE, WC, SE*country, <i>LE*country, TC*arm, LE*arm</i>	-716.05	33.41**	15	8.65	7
Model 5	Baseline alcohol screening, arm, age, sex, country, RS, SE, LE, WC, SE*country, LE*arm	-719.89	25.72**	9	7.69	6
Model 6	Baseline alcohol screening, arm, age, sex, country, RS, SE, LE, SE*country, LE*arm	-720.37	24.76**	8		

<sup>a</sup> RS: Role security, TC: Therapeutic commitment, SE: Self efficacy, LE: Leadership; WC: Work culture, RE: Resources, MO: Monitoring, CE: Community engagement. *Italics* in models 3, 4 and 5 indicate non-significant main effects and interactions which were removed from the following models.

<sup>b</sup> Values and degrees of freedom presented for Model 1 as compared to the intercept only model, and for the other models when compared to the Model 1

<sup>c</sup> Values and degrees of freedom presented for Model 4 and 5 when compared to Model 6

\*\* $p < 0.01$

Table 6 displays the results of the negative binomial regression of the selected Model 6, including role security, self-efficacy and its interaction with country, and leadership and its interaction with arm. Effects of therapeutic commitment, work culture, resources, monitoring and community engagement or their interactions with country and arm were not large enough to be included in the final model. Overall, female providers were more likely to screen a higher proportion of patients than male providers. Doctors were

less likely to screen compared to psychologists, but more likely to screen compared to nurses and other professions.

**Table 6.** Results of negative binomial regression for the final model

	IRR* (95% CI)	p
Intercept	4.09 (0.31, 54.85)	0.287
Baseline alcohol screening	1.02 (1.01, 1.03)	<0.001
Arm (base: Arm 1)		
Arm 2	0.52 (0.07, 3.72)	0.516
Arm 3	1.87 (0.28, 12.24)	0.515
Arm 4	0.30 (0.04, 2.37)	0.255
Sex (base: female)		
male	0.46 (0.27, 0.80)	0.005
Age	1.03 (1.01, 1.05)	0.014
Profession (base: doctor)		
nurse	0.38 (0.20, 0.71)	0.003
psychologist	2.33 (1.09, 4.98)	0.030
other	0.64 (0.35, 1.17)	0.147
Country (base: Colombia)		
Mexico	0.07 (0.01, 0.54)	0.012
Peru	2.16 (0.18, 26.52)	0.548
Role security	0.64 (0.49, 0.84)	0.001
Colombia* Self-efficacy <sup>a</sup>	1.13 (0.71, 1.79)	0.618
Mexico* Self-efficacy	2.35 (1.49, 3.71)	<0.001
Peru* Self-efficacy	0.89 (0.51, 1.55)	0.671
Arm 1* Leadership <sup>b</sup>	0.70 (0.42, 1.15)	0.159
Arm 2* Leadership	1.68 (1.16, 2.42)	0.006
Arm 3* Leadership	1.18 (0.84, 1.66)	0.331
Arm 4* Leadership	2.33 (1.58, 3.42)	<0.001

\*IRR – Incidence rate ratio

<sup>a</sup>For self-efficacy, its effect in each of the three countries is presented instead of the difference of the effect between the countries

<sup>b</sup>For leadership, its effect in each of the four arms are presented instead of the difference of the effect between the four arms

Role security was the only predictor with a significant main effect. For every 1-point increase in the role security scale (with other variables held constant), the associated relative decrease in the proportion of alcohol screening was 36%. Effect of self-efficacy was only significant in Mexico; for each 1-point increase on self-efficacy scale, the associated relative increase in screening proportion was 135%. In the other two countries, self-efficacy was not significantly associated with the outcome. The leadership effect differed by arm: in arm 1 (control arm), a 1-point increase in the leadership scale was associated with a 30% decrease in the screening proportion (effect not significant), in the other three arms a 1-point increase in the leadership scale was associated with an increase in screening proportion: 68% in Arm 2; 18% in Arm 3 (effect not significant); and 133% in Arm 4. Other interactions that were significant in the largest model (Model 3) but not included in the final model (as presented in Supplementary material Table 2)

were interaction between therapeutic commitment and arm (indicating that for providers from Arm 1, but not from other arms, an increase in therapeutic commitment was associated with an increased screening proportion) and interaction between leadership and country (indicating that increase in leadership support in Colombia and Mexico, but not in Peru, was associated with an increased screening proportion).

## DISCUSSION

This study investigated which motivational and organizational context factors were associated with alcohol screening behaviour of PHC providers in Colombia, Mexico and Peru. We found that role security and leadership support were the only factors associated with alcohol screening proportion across the three countries, although the effect of leadership differed by arm, and was only significant in Arm 2 and 4. Self-efficacy was associated with alcohol screening proportion only in Mexico.

Initial country comparisons of predictor variables showed significant country differences on all eight studied predictors. Whilst one explanation for such findings could be that providers from the three countries had different survey response styles, we believe this interpretation is less likely to explain the country differences, as the responses did not differ consistently in the same direction: e.g. providers in Peru did not have lower ratings on all variables. An alternative and more plausible explanation entails that the country differences may reflect the different contexts in the countries and can be interpreted in the light of two factors that differed at country level: existing alcohol screening practice in the centre, and manner of provider recruitment. Mexico was the only country in which alcohol screening was already embedded within routine practice, as official standards require PHC providers to ask their patients about alcohol consumption and include this information in their clinical history (*Norma Oficial Mexicana NOM-004-SSA3-2012 Del Expediente Clínico*, 2012; *Norma Oficial Mexicana NOM-028-SSA2-2009 Para La Prevención, Tratamiento y Control de Las Adicciones*, 2009). This could explain the higher baseline alcohol screening proportion, and the highest mean role security and mean self-efficacy found in Mexico. In contrast, Peru's scores might reflect the fact that only motivated providers with high therapeutic commitment joined the study, but that they felt less experienced in alcohol preventative work, as they also had the lowest role security and self-efficacy scores.

Our study revealed that an increase in role security was related to decreased alcohol screening proportion, which differs from results of previous European studies (Anderson et al., 2003, 2017; Anderson et al., 2014). An explanation for this could be that on average, our sample had high levels of existing role security (around 5 on 7-point scale, similar to scores reported in Bendtsen et al(2015), and higher than reported in Anderson et al. (2014)), and therefore further increase in role security did not contribute to higher alcohol screening proportion. Higher self-efficacy appeared to be the most important predictor of practice, but only in Mexico. This could be due to existing official standards; many of the providers had previous experience with alcohol screening practice, and they

could base their self-efficacy ratings on their actual experiences. Domain-specific self-efficacy has previously been found to be an important predictor of health professionals' behaviour (Ozer et al., 2004).

Leadership appeared to be the only important organizational context factor and was associated with increased alcohol screening rates in the three non-control arms. From the PHC providers' perspective, the main difference between arm 1 and arms 2-4 was that they had a chance to participate in the training. Community support, the other implementation strategy, was directed toward a supportive environment (at PHCC and municipal level), and also not fully implemented due to COVID-19 pandemic. This suggests training as a possible key factor that made a difference in the effect of leadership. With our definition of leadership as supportive actions from the formal leader in the organization, this means that more support from the PHCC manager was associated with an increase in the proportion of screened patients, but only when the providers also received training. This confirms the postulated relevance of leadership in the implementation frameworks (Damschroder et al., 2009; Flottorp et al., 2013; Nilsen & Bernhardsson, 2019). A question remains as to why the effect of leadership was smaller (and non-significant) in arm 3. This will be explored through further qualitative phases of the process evaluation.

### **Strengths and limitations of the study**

This study incorporated a range of contextual factors, which have been postulated to be important influencers of provider behaviour in theory and practice in other fields, but less researched in the field of alcohol screening. The main strength of the study is that the outcome variable was actual behaviour based on documentary information provided by PHCCs as opposed to self-report measures (e.g. recall-based questionnaires), resulting in high ecological validity. While there exist more objective methods to gather outcome data (e.g. observation), we consider documenting screening with tally sheets a suitable solution to achieve good balance between objectivity and feasibility (especially in the resource-limited context), used also in previous similar international studies (Anderson et al., 2003, 2016). However, it should be noted that in the baseline period, the providers received the tally sheets from the researchers and were asked to document their activity, which, in itself, could be considered an intervention. Using more objective measures might result in lower baseline screening rates. Furthermore, we designed the study to anticipate contextual variability (as the providers were coming from different countries and embedded in different organizational settings). At the same time, this lack of uniformity between countries could also be seen as a disadvantage of the study design. Providers with previous experience with alcohol screening came predominantly from one country (Mexico) and presumably responded to the questions according to their actual experience; whereas for the rest of the sample without previous experience in alcohol screening, it is more likely that they responded to the questions according to their anticipated behaviour. We sought to mitigate the impact of this potential limitation by including the country interactions in our analysis model, and by interpreting the

results in the light of information of the country context. Finally, despite including a relatively large number of covariates, we might have missed other important baseline factors that contributed to the outcome.

### **Implications for practice**

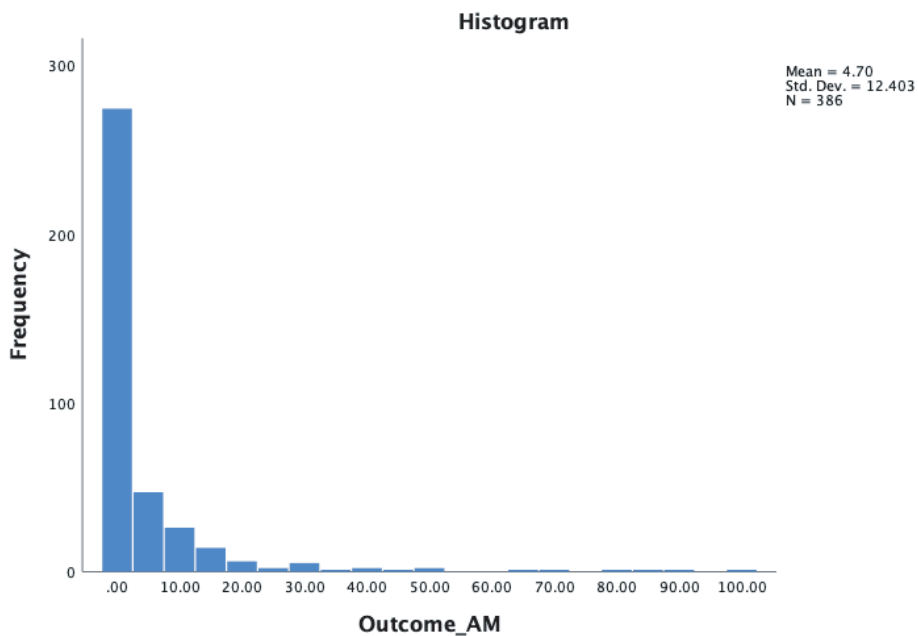
The findings of our study have a number of practical implications. First, increasing providers' self-efficacy seems important in increasing the proportion of screened patients. This could be achieved through theory-based training that incorporates evidence-based methods shown to increase self-efficacy, such as guided practice, enactive mastery experiences or modelling (Bandura, 1977; Kok et al., 2016). Second, the interaction of leadership support with the intervention arms found in our study points to the necessity of ongoing sensitization of PHCC leadership to the importance of preventive screening – their approval and support can enhance the results of the implementation efforts. Third, the highest baseline and implementation period screening rates in Mexico can be partially attributed to existing policy at the national level, described above. This implies that if the public health goal is to maximize the number of screened patients, directing efforts at introducing such policies might ultimately be more effective than implementation strategies focused only on providers (however, the time horizon needed to negotiate and achieve the implementation of such policies would likely exceed the usual length of research projects, making them less feasible). More feasible might be focusing efforts on introducing such policies at the PHCC level. Overall, the country differences in the studied factors and their relationship with the outcomes point to the importance of considering broader cultural and policy contexts in which the providers are embedded when trying to understand factors that influence screening practice, and tailoring the implementation strategies to the needs of the setting.

### **Conclusion**

This study investigated factors affecting alcohol screening behaviour amongst primary health care providers in Colombia, Mexico and Peru and their interaction with tested implementation strategies, as well as the setting of the study. Attitudes such as role security and therapeutic commitment were not prerequisites for alcohol screening behaviour, with an increase in role security actually decreasing the proportion of alcohol screening undertaken. Higher self-efficacy appeared to be an important factor in an environment with existing alcohol screening practice. Leadership support was the only significant organizational context factor that also seemed to be important across all countries, but only in arms where providers received training.

## APPENDIX 1: ADDITIONAL STATISTICAL ANALYSES

Figure A1: Outcome variable distribution



Outcome\_AM=alcohol screening proportion

**Table S1.** Simple Pearson correlations between predictors and the outcome variable (alcohol screening proportion)

	Role security	Therapeutic commitment	Self-efficacy	Leadership	Work culture	Resources	Monitoring	Community	Alcohol screening
Role security	1	0.22***	0.40***	0.23***	0.17***	0.24***	0.14**	0.20**	0.02
Therapeutic commitment		1	0.21***	-0.10	0.30***	-0.00	0.01	0.08	-0.03
Self-efficacy			1	0.10	0.05	0.24***	0.14**	0.19***	0.13*
Leadership				1	0.29**	0.39***	0.41***	0.39***	0.11*
Work culture					1	0.14**	0.17***	0.20**	-0.00
Resources						1	0.49***	0.42***	0.15**
Monitoring							1	0.54***	0.02
Community								1	0.06
Alcohol screening									1
Role security	1	0.21*	0.45**	0.18	0.24*	0.21*	0.09	0.06	0.00
Therapeutic commitment		1	0.29**	0.12	0.07	0.14	0.18	0.14	0.09
Self-efficacy			1	0.09	0.12	0.29**	0.30**	0.11	0.02
Leadership				1	0.70**	0.56**	0.53**	0.52**	0.26*
Work culture					1	0.39**	0.38**	0.39**	0.19*
Resources						1	0.67**	0.53**	0.07
Monitoring							1	0.76**	0.04
Community								1	0.08
Alcohol screening									1
Role security	1	0.28**	0.44**	0.30**	0.28**	0.35**	0.21*	0.35**	0.00
Therapeutic commitment		1	0.38**	0.17	0.23**	0.17*	0.09	0.27**	-0.04
Self-efficacy			1	0.12	0.24**	0.25**	0.12	0.21*	0.15
Leadership				1	0.61**	0.14	0.36**	0.33**	0.00
Work culture					1	0.32**	0.33**	0.32**	-0.02
Resources						1	0.29**	0.41**	0.17

Table S1. Continued.

	Role security	Therapeutic commitment	Self-efficacy	Leadership	Work culture	Resources	Monitoring	Community	Alcohol screening
Monitoring							1	0.47**	-0.01
Community								1	-0.03
Alcohol screening									1
Role security	1	0.47**	0.20*	0.02	0.03	0.02	0.01	0.04	-0.01
Therapeutic commitment		1	0.16	-0.14	0.31**	-0.08	-0.22**	-0.02	-0.05
Self-efficacy			1	-0.21**	-0.26**	0.05	-0.13	0.07	0.08
Leadership				1	-0.15	0.26**	0.29**	0.14	0.05
Work culture					1	-0.23**	-0.35**	-0.11	-0.19*
Resources						1	0.48**	0.23**	0.10
Monitoring							1	0.35**	-0.02
Community								1	0.08
Alcohol screening									1

\*p£0.05 \*\*p£0.01 \*\*\*p£0.001

Table S2. Analysis of results of for Models 1-6\*

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6						
(Intercept)	0.07	0.790	0.17	0.684	1.61	0.205	1.40	0.236	0.05	0.821	0.01	0.93
Baseline alcohol screening	10.33	0.001	12.07	0.001	22.57	<0.001	19.29	<0.001	14.86	<0.001	14.43	<0.001
Arm	50.04	<0.001	53.30	<0.001	1.71	0.634	3.49	0.322	5.10	0.164	5.17	0.16
Sex	6.42	0.011	4.86	0.027	4.68	0.031	7.75	0.005	8.81	0.003	7.74	0.005
Age	5.10	0.024	7.65	0.006	7.95	0.005	4.24	0.039	5.45	0.020	6.01	0.014
Profession	24.09	<0.001	22.33	<0.001	22.68	<0.001	23.15	<0.001	21.14	<0.001	24.12	<0.001
Country	1.85	0.397	1.19	0.550	1.89	0.388	11.79	0.003	11.95	0.003	9.79	0.007



Table S2. Continued.

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Wald Chi-Square	P	Wald Chi-Square	P	Wald Chi-Square	P	Wald Chi-Square	P	Wald Chi-Square	P	Wald Chi-Square	P
Role security	4.84	0.028	5.74	0.017	5.53	0.019	5.53	0.019	7.59	0.006	10.21	0.001
Therapeutic commitment	1.35	0.246	0.06	0.811	0.39	0.532						
Self-efficacy	4.08	0.043	0.06	0.800	2.49	0.115	4.38	0.036	4.38	0.036	3.53	0.060
Leadership	3.20	0.073	6.27	0.012	6.90	0.009	6.98	0.008	6.98	0.008	6.36	0.012
Work culture	0.22	0.638	5.73	0.017	3.87	0.049	1.30	0.255				
Resources	1.26	0.262	1.00	0.317								
Monitoring	0.42	0.519	0.01	0.915								
Community engagement	0.05	0.815	0.15	0.702								
Role security*country			0.18	0.914								
Therapeutic commitment*country			1.56	0.459								
Self-efficacy*country			7.85	0.020	17.30	<0.001	10.87	0.004	10.87	0.004	9.22	0.010
Leadership*country			7.16	0.028	3.96	0.138						
Work culture*country			1.9	0.386								
Resources*country			4.46	0.108								
Monitoring*country			2.33	0.312								
Community engagement*country			1.90	0.387								
Role security*arm			6.52	0.089								
Therapeutic commitment*arm			12.94	0.005	6.08	0.108						
Self-efficacy*arm			6.88	0.076								
Leadership*arm			8.82	0.032	18.34	<0.001	17.83	<0.001	17.83	<0.001	17.60	0.001
Work culture*arm			4.47	0.215								
Resources*arm			2.01	0.569								
Monitoring*arm			4.12	0.249								
Community engagement*arm			4.04	0.257								

\*Values in *italics* in models 3, 4 and 5 indicate non-significant main effects and interactions which were removed from the following models.

**Table S3.** Incidence rate ratios of all investigated models

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	IRR (95% CI)	P	IRR (95% CI)	P	IRR (95% CI)	P	IRR (95% CI)	P	IRR (95% CI)	P	IRR* (95% CI)	P
Intercept	0.30 (0.10, 0.87)	0.026	0.56 (0.06, 5.71)	0.625	0.83 (0.01, 114.29)	0.939	0.46 (0.01, 38.85)	0.730	5.36 (0.41, 69.26)	0.199	4.09 (0.31, 54.85)	0.287
Baseline alcohol screening	1.02 (1.01, 1.03)	0.001	1.02 (1.01, 1.03)	0.001	1.03 (1.02, 1.04)	<0.001	1.02 (1.01, 1.03)	<0.001	1.02 (1.01, 1.03)	<0.001	1.02 (1.01, 1.03)	<0.001
Arm (base: Arm 1)												
Arm 2	7.50 (3.50, 16.05)	<0.001	7.12 (3.51, 14.44)	<0.001	19.32 (0.09, 4231.75)	0.281	21.21 (0.32, 1401.29)	0.153	0.6 (0.09, 4.04)	0.598	0.52 (0.07, 3.72)	0.516
Arm 3	7.17 (3.52, 14.62)	<0.001	7.64 (3.96, 14.73)	<0.001	2.4 (0.01, 492.27)	0.748	99.35 (0.78, 12596.53)	0.063	2.00 (0.32, 12.64)	0.459	1.87 (0.28, 12.24)	0.515
Arm 4	12.90 (6.26, 26.57)	<0.001	12.23 (6.06, 24.68)	<0.001	1.8 (0.01, 642.36)	0.845	28.18 (0.16, 4834.48)	0.203	0.32 (0.04, 2.37)	0.263	0.30 (0.04, 2.37)	0.255
Sex (base: female)												
male	0.48 (0.28, 0.85)	0.011	0.49 (0.26, 0.92)	0.027	0.52 (0.28, 0.94)	0.031	0.45 (0.25, 0.79)	0.005	0.43 (0.25, 0.75)	0.003	0.46 (0.27, 0.80)	0.005
Age	1.03 (1.00, 1.05)	0.024	1.03 (1.01, 1.05)	0.006	1.03 (1.01, 1.06)	0.005	1.02 (1.00, 1.04)	0.039	1.03 (1.00, 1.05)	0.020	1.03 (1.01, 1.05)	0.014
Profession (base: doctor)												
nurse	0.44 (0.24, 0.80)	0.007	0.37 (0.19, 0.74)	0.005	0.39 (0.2, 0.76)	0.006	0.32 (0.16, 0.62)	0.001	0.37 (0.19, 0.69)	0.002	0.38 (0.20, 0.71)	0.003
psychologist	3.10 (1.43, 6.71)	0.004	2.38 (1.10, 5.13)	0.027	2.99 (1.26, 7.13)	0.013	2.00 (0.9, 4.46)	0.090	2.03 (0.89, 4.63)	0.092	2.33 (1.09, 4.98)	0.030
other	0.76 (0.41, 1.42)	0.395	0.65 (0.32, 1.30)	0.223	0.62 (0.31, 1.25)	0.181	0.64 (0.34, 1.23)	0.185	0.6 (0.33, 1.11)	0.104	0.64 (0.35, 1.17)	0.147
Country (base: Colombia)												
Mexico	0.89 (0.47, 1.71)	0.731	0.73 (0.40, 1.35)	0.316	0.59 (0.01, 28.27)	0.791	0.07 (0.01, 0.99)	0.049	0.06 (0.01, 0.45)	0.007	0.07 (0.01, 0.54)	0.012
Peru	0.59 (0.26, 1.36)	0.218	0.96 (0.37, 2.45)	0.928	54.26 (0.09, 33104.96)	0.222	13.31 (0.52, 341.61)	0.118	2.9 (0.24, 35.79)	0.406	2.16 (0.18, 26.52)	0.548
Role security			0.71 (0.52, 0.96)	0.028	0.35 (0.16, 0.78)	0.010	0.72 (0.54, 0.95)	0.019	0.67 (0.51, 0.89)	0.006	0.64 (0.49, 0.84)	0.001
Therapeutic commitment			0.84 (0.62, 1.13)	0.246	4.27 (1.51, 12.06)	0.006	1.73 (0.89, 3.33)	0.104				
Self-efficacy			1.41 (1.01, 1.98)	0.043	0.5 (0.19, 1.31)	0.159	1.01 (0.61, 1.67)	0.955	1.16 (0.73, 1.82)	0.536	1.13 (0.71, 1.79)	0.618
Leadership			1.30 (0.98, 1.73)	0.073	1.04 (0.5, 2.17)	0.909	0.94 (0.52, 1.7)	0.840	0.74 (0.45, 1.22)	0.243	0.70 (0.42, 1.15)	0.159
Work culture			0.91 (0.63, 1.33)	0.638	0.66 (0.29, 1.50)	0.321	0.69 (0.48, 1.00)	0.049	0.82 (0.58, 1.15)	0.255		
Resources			1.15 (0.90, 1.47)	0.262	0.65 (0.35, 1.22)	0.184						
Monitoring			0.92 (0.71, 1.19)	0.519	2.47 (0.8, 7.67)	0.117						
Community engagement			0.97 (0.76, 1.25)	0.815	0.91 (0.41, 2.02)	0.809						



Table S3. Continued.

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	IRR (95% CI)	P	IRR (95% CI)	P	IRR (95% CI)	P	IRR (95% CI)	P	IRR (95% CI)	P	IRR* (95% CI)	P
Colombia (base)* Community engagement												
Mexico* Community engagement			0.94 (0.48, 1.84)	0.858								
Peru* Community engagement			1.48 (0.70, 3.15)	0.307								
Arm 1 (base)* Role security												
Arm 2* Role security			2.72 (1.14, 6.49)	0.024								
Arm 3* Role security			2.72 (1.20, 6.17)	0.017								
Arm 4* Role security			2.21 (0.83, 5.88)	0.113								
Arm 1 (base)*Therapeutic commitment												
Arm 2* Therapeutic commitment			0.17 (0.06, 0.47)	0.001	0.44 (0.21, 0.90)	0.025						
Arm 3* Therapeutic commitment			0.18 (0.07, 0.49)	0.001	0.45 (0.21, 0.99)	0.046						
Arm 4* Therapeutic commitment			0.25 (0.08, 0.75)	0.014	0.38 (0.16, 0.93)	0.033						
Arm 1 (base)* Self- efficacy												
Arm 2* Self-efficacy			0.58 (0.22, 1.56)	0.282								
Arm 3* Self-efficacy			1.85 (0.76, 4.53)	0.175								
Arm 4* Self-efficacy			1.57 (0.49, 5.09)	0.448								
Arm 1 (base)* Leadership												
Arm 2* Leadership			1.90 (0.87, 4.13)	0.106	2.54 (1.40, 4.60)	0.002	2.31 (1.30, 4.09)	0.004	2.41 (1.33, 4.37)	0.004		
Arm 3* Leadership			1.25 (0.60, 2.60)	0.555	1.59 (0.85, 2.99)	0.148	1.69 (0.95, 2.98)	0.072	1.70 (0.95, 3.04)	0.075		
Arm 4* Leadership			2.99 (1.36, 6.55)	0.006	3.38 (1.80, 6.33)	<0.001	3.32 (1.83, 6.00)	<0.001	3.34 (1.82, 6.13)	<0.001		
Arm 1 (base)* Work culture												

Table S3. Continued.

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	IRR (95% CI)	P	IRR (95% CI)	P	IRR (95% CI)	P	IRR (95% CI)	P	IRR (95% CI)	P	IRR* (95% CI)	P
Arm 2* Work culture					1.84 (0.66, 5.16)	0.246						
Arm 3* Work culture					1.82 (0.69, 4.79)	0.225						
Arm 4* Work culture					0.92 (0.37, 2.30)	0.856						
Arm 1 (base)* Resources												
Arm 2* Resources					1.57 (0.77, 3.21)	0.211						
Arm 3* Resources					1.41 (0.66, 3.01)	0.373						
Arm 4* Resources					1.17 (0.58, 2.36)	0.656						
Arm 1 (base)* Monitoring												
Arm 2* Monitoring					0.38 (0.13, 1.09)	0.071						
Arm 3* Monitoring					0.69 (0.22, 2.17)	0.529						
Arm 4* Monitoring					0.62 (0.20, 1.90)	0.403						
Arm 1 (base)* Community engagement												
Arm 2* Community engagement					1.41 (0.61, 3.26)	0.422						
Arm 3* Community engagement					0.69 (0.29, 1.64)	0.403						
Arm 4* Community engagement					1.22 (0.48, 3.12)	0.677						

## APPENDIX 2: OVERVIEW OF THE QUESTIONNAIRE ITEMS

### Short Alcohol and Alcohol Problems Perception Questionnaire

Indicate how much you agree or disagree with each of the following statements about working with “drinkers”. For this part of the question, “drinkers” refers to people with heavy or harmful alcohol use. (1 – Strongly disagree to 7- Strongly agree)

1. RS - I feel I know enough about causes of drinking problems to carry out my role when working with drinkers
2. RS - I feel I can appropriately advise my patients about drinking and its effects
3. TC (reversed) - I feel I do not have much to be proud of when working with drinkers
4. TC (reversed) - All in all, I am inclined to feel I am a failure with drinkers
5. TC - I want to work with drinkers
6. TC (reversed) - Pessimism is the most realistic attitude to take towards drinkers
7. RS - I feel I have the right to ask patients questions about their drinking when necessary
8. RS - I feel that my patients believe I have the right to ask them questions about drinking when necessary
9. TC - In general, it is rewarding to work with drinkers
10. TC - In general, I like drinkers

### Self-efficacy

In your daily practice, how difficult or easy do you find: (1 – Very difficult to 5 – Very easy)

1. Raising the issue of alcohol with patients
2. Using a screening test to explore current alcohol use of patients
3. Explaining risks to health from different levels of alcohol consumption
4. Providing patients with ideas and practical advice on how to cut down
5. Helping patients to manage high risk drinking situations

### Organizational context (based on COACH questionnaire)

Indicate how much you agree or disagree with each of the following statements about your primary health care centre. There are no right or wrong answers. (1-Strongly disagree to 5-Strongly agree)

1. (Resources) My centre has enough workers with the right training and skills to implement screening and brief advice programmes to reduce heavy drinking
2. (Resources) My centre has enough workers with the right training and skills to do their job in implementing screening and brief advice programmes to reduce heavy drinking in the best possible way
3. (Community engagement) In my centre, we have meetings with community members to discuss alcohol-related health matters

4. (Community engagement) In my centre, we encourage community members to contribute to improving the health of the community by reducing alcohol consumption
5. (Monitoring) I receive regular updates about my centre's performance in screening and giving brief advice for heavy drinking based on information/data collected from our centre
6. (Monitoring) My centre discusses information/data from our centre screening and giving brief advice for heavy drinking in a regular, formal way, such as in regularly scheduled meetings
7. (Work culture) My centre is willing to use new healthcare practices such as guidelines and recommendations for screening and giving brief advice for heavy drinking
8. (Work culture) I am encouraged to seek new information on healthcare practices for screening and giving brief advice for heavy drinking
9. (Leadership) The Centre's manager actively listens, acknowledges, and then responds to requests and concerns about programmes to screen and give brief advice for heavy drinking
10. (Leadership) The Centre's manager encourages the introduction of new programmes to screen and give brief advice for heavy drinking







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## **CHAPTER 6**

# **Country and policy factors influencing the implementation of primary care-based alcohol screening: a comparison of Colombia, Mexico and Peru**

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## ABSTRACT

Researchers and practitioners recognize the importance of context when implementing healthcare interventions, but the influence of wider environment is rarely mapped. This paper identifies the country and policy-related factors potentially explaining the country differences in outcomes of an intervention focused on improving detection and management of heavy alcohol use in primary care in Colombia, Mexico and Peru. Qualitative data obtained through interviews, logbooks and document analysis are used to explain quantitative data on number of alcohol screenings and screening providers in each of the countries. Existing alcohol screening standards in Mexico, and policy prioritization of primary care and consideration of alcohol as a public health issue in Colombia and Mexico positively contributed to the outcome, while the COVID-19 pandemic had negative impact. In Peru, the context was unsupportive due to a combination of: political instability amongst regional health authorities; lack of focus on strengthening primary care due to the expansion of community mental health centres; alcohol considered as an addiction rather than a public health issue; and the impact of COVID-19 on healthcare. We found that wider environment-related factors interacted with the intervention implemented and can help explain country differences in outcomes.

## INTRODUCTION

Although there is a widespread awareness of the importance of “context” in both implementation and intervention research, many authors point out the inconsistencies in the interpretation and application of the term (e.g. Grant et al., 2020; Nilsen, 2015; Pfadenhauer et al., 2017). In the process evaluation literature, context is sometimes defined as the wider physical, social and political environment (Steckler & Linnan, 2002); but also as “any external aspect of the intervention that might influence its implementation” (Moore et al., 2014). Despite differing definitions, there is a common recognition that context not only provides a backdrop to the intervention, but also interacts with and influences both the implementation and outcomes of an intervention (Moore et al., 2014; Pfadenhauer et al., 2017). However, the existing evaluations of contextual factors have been critiqued for only listing the broadly conceptualized factors (for example “organizational policies” or “patient attitudes”) without the appropriate depth and explanation (Grant et al., 2020).

The “wider environment” aspect of context (defined by Nilsen & Bernhardsson (2019) as “*exogenous influences on implementation in health care organizations, including policies, guidelines, research findings, evidence, regulation, legislation, mandates, directives, recommendations, political stability, public reporting, benchmarking and organizational networks*”) has seen limited consideration, both in the existing implementation frameworks (as shown in Nilsen & Bernhardsson (2019) and in the healthcare implementation studies (Daivadanam et al., 2019; Liu et al., 2019; Rogers et al., 2020). Booth et al., (2019) suggested that there is often inadequate information

about context in published (effectiveness) studies, which limits the potential to use the findings to inform subsequent reviews and guidelines for policy and practice. However, it is important to describe this broader context and its interaction with the intervention, in order to better understand whether and how innovations are transferable to other settings (Booth et al., 2019). This is especially important when interventions are being developed and implemented in low- and middle-income countries, often based on evidence from implementation in high income settings (Theobald et al., 2018).

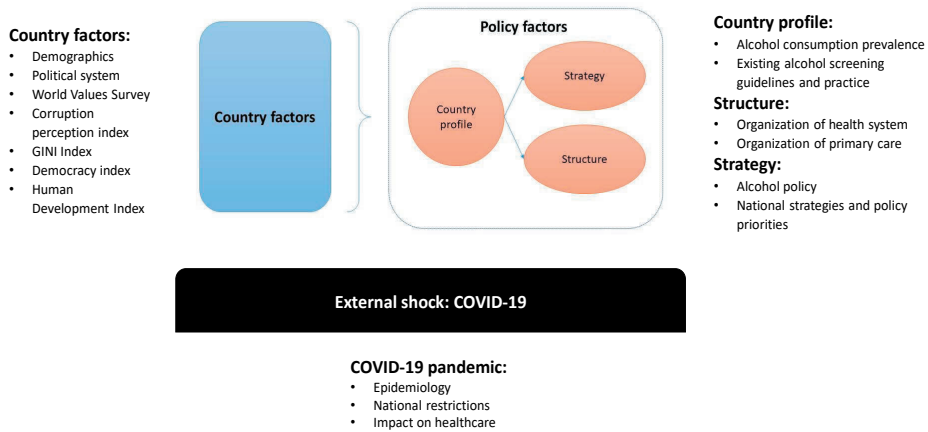
Against this backdrop of both a lack of clear conceptualization of context, and inadequate consideration of the impact of the wider environment on implementation, this paper aims to examine the country and policy context of Colombia, Mexico and Peru and consider its impact on the outcomes of the SCALA study. SCALA (Scale-up of Prevention and Management of Alcohol Use Disorders in Latin America) was a Horizon 2020 funded implementation study that aimed to increase primary health care providers' delivery of screening for risky alcohol use and comorbid depression (Janello et al., 2020). The SCALA study tested whether training primary care providers (detailed description in (Kokole et al., 2022), and providing community support (a range of adoption mechanisms and support systems, (Solovei et al., 2021) increased rates of alcohol and depression screening amongst primary care patients. Training was found to be the key implementation strategy to increase rates of both alcohol and depression activities before the implementation study delivery was majorly disrupted by the COVID-19 pandemic (Anderson et al., 2021). Improving implementation of such services in primary care is relevant since evidence from multiple studies shows that delivery of a short intervention by a primary care provider can reduce a patient's alcohol consumption and thereby lower their risk of experiencing alcohol-related harm (Kaner et al., 2018; O'Donnell, Wallace, et al., 2014), including in low- and middle-income countries (Ghosh et al., 2022; Joseph & Basu, 2017; Staton et al., 2022).

Previous evaluations of program implementations in primary care have shown the importance of taking into account the broader socio-political context and structure of healthcare systems when implementing interventions in low- and middle-income countries (Faregh et al., 2019; Shannon et al., 2021), but the wider environment factors are rarely explicitly evaluated in studies focused on the implementation of alcohol screening and brief interventions beyond citing factors such as time constraints, patients' beliefs about alcohol, or lack of financial incentives (Rosário et al., 2021). The SCALA study was conducted simultaneously in Colombia, Mexico, and Peru, providing us with an opportunity to compare the country and policy contexts of the three countries and their impact on the implementation of alcohol screening in primary care practice. Our previously published papers examining factors influencing implementation of alcohol screening as part of the same study already indicated the existence of country-level differences. For example: lack of clear guidelines and screening instruments being perceived as anticipated barriers in Peru, but not in Colombia and Mexico (Kokole, Mercken, et al., 2021); provider self-efficacy at baseline being associated with an increase

in the proportion of screened patients among Mexican, but not among Colombian and Peruvian providers (Kokole, Jané-Llopis, et al., 2021); and different professional roles more likely to participate and screen patients (doctors in Colombia and Mexico, and psychologists in Peru (Kokole et al., 2022)). These findings confirmed a need for a more thorough and systematic examination of the impact of the wider environment on alcohol screening implementation.

As the main analysis framework, the model proposed by Ysa et al., (2014) was taken as a starting point and adapted for the purposes of this study, as described in the published protocol (Jane-Llopis et al., 2020). The model (summarized in Figure 1 and further described in Appendix 1) builds on two levels of analysis: 1) country factors, which are the general characteristics of the studied countries (demographics, political structure, values etc.), not directly related to implementation of alcohol screening as the studied intervention and 2) policy factors (more proximal to the studied intervention): policy profile of the country (e.g. existing alcohol consumption and guidelines), strategies (e.g. alcohol-related strategies and policy priorities) and structures which the intervention is embedded (healthcare system and primary care). Later, external shocks (unexpected external events impacting the intervention, as framed in (Craig et al., 2018)) category was also added to the model, due to onset of COVID-19 pandemic during the implementation period.

**Figure 1.** Framework for the contextual analyses, adapted from Ysa et al. (2014)



In summary, the current paper aims to describe the initial country and policy context of the countries in which the SCALA study took place (Colombia, Mexico and Peru), including the impact of COVID-19; and to evaluate the impact of the country and policy factors, including impact of COVID-19, on implementation of alcohol screening in primary care.

## METHODS

### Design

This mixed methods study is part of a broader process evaluation of the SCALA study (Jane-Llopis et al., 2020). Both qualitative and quantitative data have been collected with the purpose of complementarity (Palinkas & Rhoades Cooper, 2018) with qualitative data used to describe the country and policy factors and quantitative data used to present the outcomes of the SCALA study, with data integration carried out at the point of analysis and interpretation.

### Data sources and collection

To describe the country and policy context in each country, targeted desktop research of relevant sources was performed according to the predetermined list of factors (as described in Figure 1), based on the framework of Ysa et al. (2014). The lead author searched websites of national and international organizations for information on demographics, development indices, organization of healthcare systems, alcohol-related epidemiology, national strategies, and action plans. Additionally, local research partners in each country were approached to provide any documents they considered helpful to help describe the country and policy context. With the beginning of the COVID-19 pandemic, we also started systematically collecting data on the progression and impact of the pandemic in the countries through the reports from the local implementers. To map the impact of country and policy factors on the implementation of alcohol screening (as the primary study outcome), we relied on three main sources of data: *logbooks*, *interviews* and *project documentation*.

Every 4-6 weeks, implementation and research partners from each country sent *logbooks* to the process evaluation coordinator. The implementers had to shortly describe whether any changes had occurred on a national or regional level that could impact the project implementation. The logbooks also contained space to provide information about field visits and feedback received from the providers in the primary care centres. *Project documentation* refers to project meeting minutes, project presentations and project reports, which were shared with the process evaluation coordinator after every relevant meeting. These sources were scanned for any discussions pertaining to the impact of social and political context on implementation. *Semi-structured (group) interviews* with local stakeholders involved in the implementation (researchers, trainers, liaisons with the participating centres) were conducted at three different time points during the project: prior to implementation of the intervention (Colombia (N=2) and Mexico (N=5) in May 2019); midway through the implementation period (Colombia (N=2), Mexico (N=4) and Peru (N=2) in November/December 2020); and at the end of the implementation period (Colombia (N=2), Mexico (N=5), and Peru (N=3) in August/September 2021). The initial topic guides (before the start of the project) for the interviews covered issues regarding general changes in the socio-political context, as well as any specific factors influencing project implementation. Later topic guides were tailored to each country

based on the information obtained through logbooks and project documentation, to enable the exploration of any issues pertaining to country and policy context that had emerged during project implementation. Interviews were conducted in Spanish by the process evaluation coordinator, audio recorded, transcribed, and translated into English. The interviews ranged between 30 and 90 minutes in length. A complete overview of the data collection process is summarized in Figure 2.

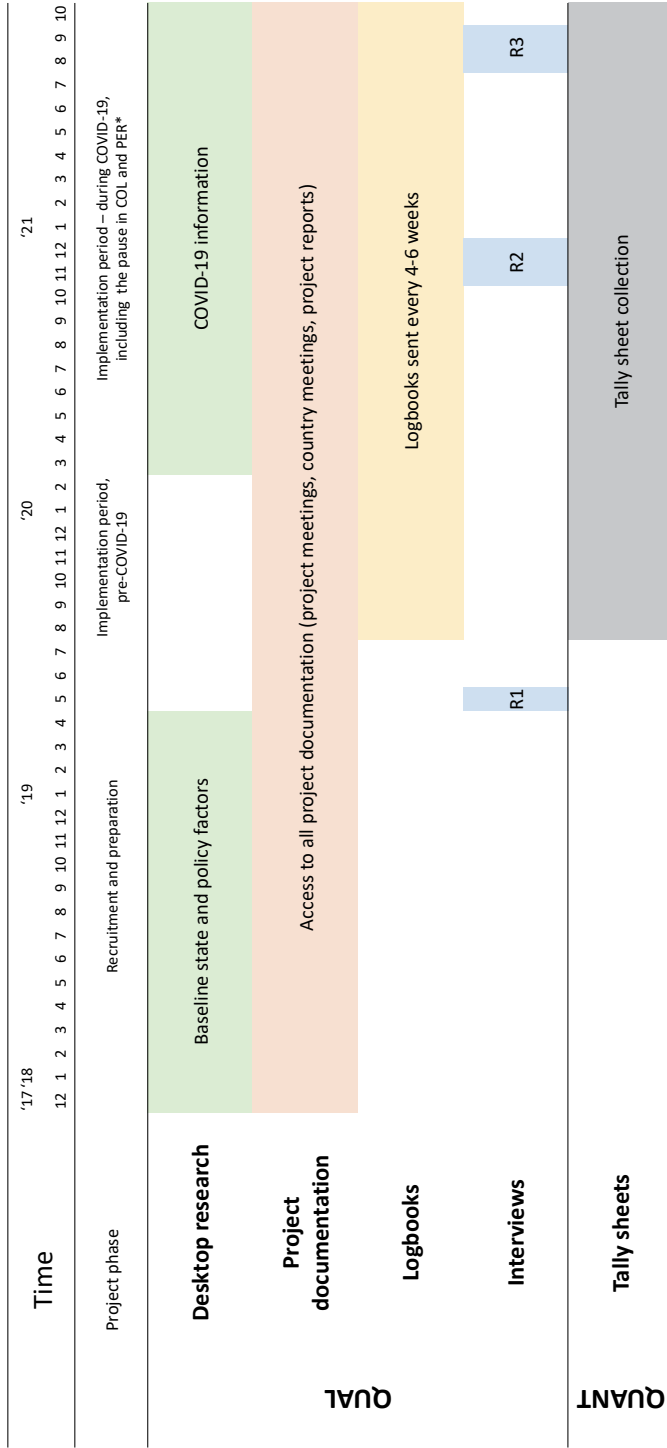
To describe the number of alcohol screenings over time, the number of tally sheets collected throughout the study period was considered, namely the number of alcohol screenings (applications of AUDIT-C questionnaire (Babor et al., 2001)) by country and month, as well as the number of providers applying the questionnaire at least once. Only data from the intervention arms were considered (not from the control arm), as we assumed that the implementation of the tested implementation strategies was comparable between the countries (despite some timing and execution differences), thus the remaining differences in the outcomes could be attributed to non-implementation related factors.

### **Data analysis**

The qualitative data obtained through the sources described above were analysed through a combination of inductive and deductive coding (National Institutes of Health, 2018). The analysis was done in collaboration between one researcher from outside the countries and the research teams within the countries. First, one researcher (DK) thematically analysed the qualitative data sources for the country and policy factors that were discussed as impacting alcohol screening during the implementation period, and mapped those factors to the main framework (as depicted in Figure 1) (Ysa et al., 2014). Any available explanation on how those factors were purported to have influenced alcohol screening practices was also extracted, as was categorisation of factors as having a predicted positive (+) or negative (-) impact on the outcome. The identified factors and assessment of mechanisms and direction of the impact on country level were then additionally checked and validated by the research teams from each of the studied countries.

Next, SPSS and Excel were used to analyse and present the available outcome data (overall and monthly number of alcohol screenings and screening providers). Quantitative and qualitative data were merged for analysis through data transformation (Fetters et al., 2013) (qualitative factors categorised as having positive or negative impact, and then compared with the quantitative outcomes) and further compared with the construction of joint display, with both categories of findings presented side-by-side (Guetterman et al., 2015). Initial assessment and interpretation were done by one researcher, which were then again validated by the research teams from each of the studied countries.

**Figure 2.** Overview of data collection process



\* In Colombia, implementation period took place between August 2019 and June 2021, with application of screening paused between March and August 2020 due to COVID-19 restrictions. In Mexico, the implementation period took place between September 2019 and August 2021. In Peru, implementation period took place between September 2019 and August 2021, with application of screening paused between March 2020 and May 2021 due to COVID-19 restrictions.



## Ethics

The SCALA study, including the process evaluation plan, has been reviewed and approved by the research ethics board at the TU Dresden, Germany (registration number: 'EK 90032018'), and by the ethics boards in Colombia, Mexico, and Peru. All the interviewed participants provided informed consent to participation.

## RESULTS

### Describing the country and policy factors at the beginning of implementation

The key country and policy factors identified at baseline are detailed and referenced in the Appendix 1, based on the 32 identified literature sources, and briefly summarized in Table 1. The three studied countries are similar in income level, human development and democracy, inequality, corruption perception as well as in values; therefore, these factors were unlikely to affect differences in country screening rates. The average per capita alcohol consumption is highest in Peru and lowest in Mexico, with marked differences between males and females in all three countries. Mexico has official standards that require inclusion with regard to information on alcohol use in patient's clinical history, and both Colombia and Mexico have standalone alcohol policies and action plans on the implementation of the policy. In all three countries, there has been a focus on strengthening primary care through primary care reforms, and in Peru, mental health reform was ongoing at the start and during SCALA implementation.

### Mapping impact of the country and policy factors on alcohol screening

The country and policy factors identified as potentially affecting the alcohol screening implementation in each of the countries are summarized in Table 2 and further detailed in the Appendix 2. The identified factors were classified as general (features of the wider environment possibly impacting overall results of the intervention in the countries) or time-bound (events during the implementation period that could impact the implementation during a specific time frame). For each of the factors identified through the qualitative investigation, the perceived mechanism and direction of impact is also presented.

Among the general factors, country factors such as characteristics of the population in Colombia and Peru, and political factors in Peru were identified, all of them perceived to have a negative impact on the SCALA implementation. In Colombia, the population in the intervention municipality changed often because they were only temporarily living in the town, meaning the providers had less opportunity to establish longer-term relationships with patients attending the primary health care centre (which would facilitate conversations about alcohol consumption). In Peru, some patients responded aggressively to their provider attempting to start a conversation on alcohol, particularly in centres located in disadvantaged areas with a high crime rate. Additionally, general

political instability in the Peru was reflected also at a regional level, with five regional health authorities' directors changing over two years, which hindered attempts to assure continuous project support from the health authorities. The existing screening practice was perceived to have a positive impact especially in Mexico, and to some extent in Colombia, but not in Peru. Likewise, policy priorities both in terms of existence of alcohol policy and policy prioritization of primary care were perceived as having positive impact in Colombia and Mexico. Healthcare system-related factors such as higher resistance to study participation among a small subset of unionized providers in Mexico, and general fragmentation of the healthcare system in Peru were seen as having a negative impact.

Among the time-bound factors, the COVID-19 pandemic had a negative impact in all three countries, but to a largest extent in Peru, as the activity of the healthcare centres was severely restricted for the longest period. Other external events negatively impacting the ability of the providers to screen were anti-government protests across Colombia, including in the intervention municipality of Soacha in the end of April 2021 (through decreasing patient attendance in the primary care centres), and a measles outbreak in Mexico in February/March 2021 (through redirecting primary care providers' priorities to manage the outbreak). Some time-bound factors related to existing healthcare systems were also identified as relevant, such as yearly termination of providers contracts in Colombia, and introduction of the new insurance scheme in Mexico (Instituto de Salud para el Bienestar), which through increased coverage increased patient attendance, and allowed some centres to employ new providers (some of which ended up joining the study). Finally, a combination of political factors and COVID-19 related changes affected the length of the term of the project champion on the influential position in Colombia: initially, the project champion would have to end her term in April 2020 due to election-related changes of personnel, but this was then delayed due to COVID-19, so the project champion was able to stay in the (influential) position five additional months. In conclusion, in Peru, all of the identified contextual factors negatively impacted the implementation, whereas in Mexico and Colombia, both facilitating and hindering factors were identified.

**Table 1.** Summary of the country and policy factors at the beginning of the implementation and impact of COVID-19

	Colombia
<i>Country factors (A1-11)*</i> Country demographics Political system World values survey Corruption perception index GINI Index Human Development Index	<ul style="list-style-type: none"> <li>• population 48 258 494 (2018 data)</li> <li>• presidential democratic republic</li> <li>• upper middle income</li> <li>• high human development</li> <li>• values emphasizing the importance of religion, parent-child ties, deference to authority and traditional family values, as well as economic and physical security</li> <li>• higher inequality</li> <li>• higher public sector corruption</li> </ul>
<i>Policy factors: country profile (A12-18)</i> Alcohol consumption prevalence Existing alcohol screening guidelines and practice	Total alcohol consumption 15+ (in litres of pure alcohol): 5.5 [4.4, 6.6] Males: 8.8 [7.2, 10.9] Females: 2.3 [1.8, 2.8] Alcohol and depression early detection recommendation guidelines exist, but no indication of their use in practice
<i>Policy factors: structures (A19-25)</i> Organization of health system Organization of primary care	<i>Sistema General de Seguridad Social en Salud (SGSSS, General System of Social Security in Health).</i> Most people are affiliated with the SGSSS through contributory regime or the subsidized regime. There is also the special benefit regime and private insurance. In 2016, the new Comprehensive Health Care Model (Modelo Integral de Atención en Salud, MIAS) was introduced, with the aim to strengthen primary health care delivery and improve population access to healthcare, through increasing the responsibility and decision-making capacity of health teams.
<i>Policy factors: strategies (A26-31)</i> Alcohol and mental health policy National strategies and policy priorities	Both alcohol policy and action plans exist
<i>External shocks (added later) (A32)</i> COVID-19 pandemic	First case on March 6, 2020 4.91 million confirmed cases and 124 883 confirmed deaths as of 30 <sup>st</sup> August 2021 On March 17, 2020 (Decree 417), state of emergency was declared, followed by national lockdown PHCCs stop regular consultations between March and June 2020, followed by gradual reopening

\*references included in the Appendix 1

Mexico	Peru
<ul style="list-style-type: none"> <li>• population 119 938 473 (2015 data)</li> <li>• Unitary semi-residential representative democratic republic</li> <li>• upper middle income</li> <li>• high human development</li> <li>• values emphasizing the importance of religion, parent-child ties, deference to authority and traditional family values, as well as economic and physical security</li> <li>• higher inequality</li> <li>• higher public sector corruption</li> </ul>	<ul style="list-style-type: none"> <li>• Population 31 237 385 (2017 data)</li> <li>• Federal presidential representative democratic republic</li> <li>• upper middle income</li> <li>• high human development</li> <li>• values emphasizing the importance of religion, parent-child ties, deference to authority and traditional family values, as well as economic and physical security</li> <li>• higher inequality</li> <li>• higher public sector corruption</li> </ul>
<p>Total alcohol consumption 15+ (in litres of pure alcohol): 5.0 [4.0, 6.3]  Males: 8.1 [6.5, 10.3]  Females: 2.2 [1.7, 2.7]  Official standards (NOM-028-SSA2-1999) and (NOM-004-SSA3-2012) stipulate inclusion of information on alcohol use in patients' clinical history, application of AUDIT can count towards productivity for some types of professionals</p>	<p>Total alcohol consumption 15+ (in litres of pure alcohol): 6.8 [5.7, 8.0]  Males: 10.4 [8.8, 12.3]  Females: 3.2 [2.7, 3.9]  No existing guidelines, mental related health screening can count towards productivity</p>
<p>Mexican health care works by three-tier system: a mix of social insurance schemes, a voluntary public programme for the uninsured, and private insurance. In 2015, a Comprehensive Health Care model (MAI) was introduced in order to standardize health care services, optimize health resources and infrastructure, and promote citizens' participation, which placed PHC one of the most important strategies for healthcare in Mexico.</p>	<p>The Peruvian health care system consists of four tiers: comprehensive health insurance of the Ministry of Health, social security, armed forces. national police insurance, and private insurance. It is decentralized: the national level sets overall policies and frameworks (supervise, with regional and local authorities being responsible for implementation.  In 2003, the Ministry of Health formulated and formalized, the Comprehensive Health Care Model (Modelo de Atención Integral de Salud, MAIS), but with limited implementation. In 2011, Comprehensive Health Care Model based on Family and Community (Modelo de Atención Integral de Salud basado en Familia y Comunidad, MAIS-BFC) was introduced to further strengthen primary care</p>
<p>Both alcohol policy and action plans exist</p>	<p>Only mental health policy and action plan, no standalone alcohol policy  Mental health reform: one pillar is strengthening the role of primary health care centres and general hospitals, second pillar is focused on establishments of the Community Mental Health Centres (CMHCs) to aid shift of mental healthcare from psychiatric hospitals to the community level</p>
<p>First case of COVID-19 was confirmed on February 28, 2020  3.34 million cases and 258 491 deaths in Mexico as of 30<sup>st</sup> August 2021  No nation-wide lockdown, instead relying on public service announcement campaign to promote social distancing and hand washing (Jornada de Sana Distancia). Some restrictions on state level  PHCCs shift focus but do not stop working</p>	<p>First case on March 6, 2020  2.15 million cases and 198 269 deaths in Peru as of 30<sup>st</sup> August 2021  State emergency announced on March 15 (Supreme Decree N° 044-2020-PCM), strict national lockdown  Health services restricted to emergency and COVID-19 care</p>

Table 2. Overview of the country and policy factors influencing the implementation of alcohol screening

Factor	Colombia	Mexico	Peru
<b>General factors</b>			
<b>Country factors</b>	<p>Displaced population in the intervention municipality (population changes often)</p> <p>→ less opportunity for the providers to establish longer-term relationships with attending patients that would facilitate conversations about alcohol</p>	(-)	<p>High crime rates in some areas</p> <p>→ in one centre, patients responded aggressively to additional questions, impeded providers starting conversations around alcohol</p>
<b>Country Political factors</b>			<p>General political instability in the country reflected also on the regional level with five regional health authorities' directors changing over two years</p> <p>→ due to constant changes, it is difficult to ensure continuous support from health authorities</p>
<b>Policy factors: country profile</b>	<p>Alcohol early detection recommendation guidelines exist, but no indication of their use in practice</p> <p>→ some providers familiar with AUDIT and concept of alcohol screening, facilitating its application in practice</p>	(+)	<p>No existing general guidelines, screening considered as a domain of psychologists (as they are trained for it)</p> <p>→ majority of providers (who are not psychologists) not familiar with AUDIT or concept of alcohol screening, impeding its introduction in practice</p>
<b>Policy factors: strategies</b>	<p>In policy documents, alcohol framed as public health issue, and there is standalone alcohol policy</p> <p>→ population approaches such as alcohol screening better accepted by authorities and providers</p>	<p>Official standards stipulate inclusion of information on alcohol use in patients' clinical history</p> <p>→ majority of providers familiar with AUDIT and using it in practice at least occasionally, facilitating its application in practice</p> <p>In policy documents, alcohol framed as public health issue, and there is standalone alcohol policy</p> <p>→ population approaches such as alcohol screening better accepted by authorities and providers</p>	<p>In policy documents, alcohol is framed as an addiction/medical issue, and there is no standalone alcohol policy</p> <p>→ leads to authorities and providers' perception that alcohol problems should be dealt by specialists on individual level, rather than by primary care providers</p>
<b>Policy factors: strategies</b>	<p>In policy documents, there is emphasis on strengthening of primary care</p> <p>→ support for the project from the regional authorities as it fits well with the primary care focus</p>	(+)	<p>Ongoing mental health reform: focus is on development of community mental health centres (but not on strengthening primary care level)</p> <p>→ lack of support for the project from the regional authorities as there are other priorities</p>

Table 2. Continued.

Factor	Colombia	Mexico	Peru
<b>Policy factors: priorities strategies</b>	<p>Focus on primary care also means competition of other promotion and prevention projects</p> <p>→ primary care institutions can select between several possible preventive activities, alcohol screening not always priority</p>	<p>Focus on primary care also means competition of other promotion and prevention projects, there are other trainings for providers to attend</p> <p>→ providers can select between several possible preventive activities, alcohol screening not always priority</p>	<p>Tuberculosis screening competition on primary health care level</p> <p>→ providers have to select between activities (Screening for tuberculosis must be carried out if patients ask for that service), alcohol screening not always priority</p>
<b>Policy factors: system structures</b>		<p>Higher resistance for participation in additional activities among the unionized providers</p> <p>→ unionization providing protection against additional workload</p>	<p>Fragmentation of the healthcare system and vertical integration</p> <p>→ because the main entry point in the healthcare system (to recruit the centres) was only through the regional health authorities, it was in practice difficult to obtain access to the centres because of the leadership instability within the regional health authorities</p>
<b>Time-bound factors</b>			
<b>Existing healthcare system</b>	<p>Temporary contracts as part of obligatory “año rural” (rural internship year)</p> <p>→ When participating providers contracts expire, generally by the end of the year, they very often have to leave the centre and their position</p>	<p>Implementation of new insurance scheme (INSABI) covering larger part of population (starting from January 2020 but with delayed implementation due to COVID-19)</p> <p>→ more patients eligible to attend the centres, new providers employed by the centres (and some joining the project)</p>	
<b>Impact of COVID-19 restrictions</b>	<p>PHCCs not open for non-urgent consultations between March-August 2020</p> <p>After August 2020 reorganization of the centres to accommodate new covid-19 related tasks</p> <p>Higher workload for providers, focus on dealing with COVID-19 related issues</p> <p>→ no opportunity for providers to perform alcohol screening in this period</p>	<p>PHCCs continue operating, albeit in restricted manner</p> <p>Refocus of providers work to deal with COVID-19 (testing, later vaccinations), decreased patient attendance</p> <p>Vulnerable providers not coming to work, high workload for remaining providers</p> <p>Medical interns are not allowed to work in the centres anymore</p> <p>→ centres are able to choose whether to continue with alcohol screening, 6 centres continue with tally sheet application in period March-August 2020</p> <p>Loss of trained providers as interns not allowed to work in centres anymore</p>	<p>PHCCs not open for non-urgent consultations March 2020 -May 2021</p> <p>Vulnerable providers not coming to work</p> <p>Healthcare system collapsing under pressure</p> <p>→ focusing on healthcare system survival and dealing with COVID-19 more important than alcohol screening in PHCCs, therefore non-urgent matters were not prioritized</p>

Table 2. Continued.

Factor	Colombia	Mexico	Peru
<b>Interaction of COVID-19 impact with other factors</b>	Regional elections contributing to project champion ending her term on influential position in intervention municipality – but they are able to stay on the influential position longer as mandate extended due to COVID-19 related restrictions (November 2020 instead of April 2020) → during their term, the project champion had influence on setting goals and encouraging applications of screening in the centres	-/+	
<b>External shocks</b>	Politically motivated protests across Colombia, including Soacha in April/May 2021 → less patients attending the centre due to traffic disruption and violence on the streets	- Measles outbreak in Mexico City in February/March 2021 → some providers have to redirect their work on measles outbreak prevention (surveillance, vaccination)	-

*Legend:* Factor → mechanism by which the factor would impact the outcome ; Direction of impact: + : positive impact likely associated with outcome; - : negative impact likely associated with outcome (can explain the examined outcomes) (+) : positive impact possibly associated with outcome ; (-) : negative impact possibly associated with outcome (but cannot be ascertained from the examined outcome).

## Association with the outcome – general factors

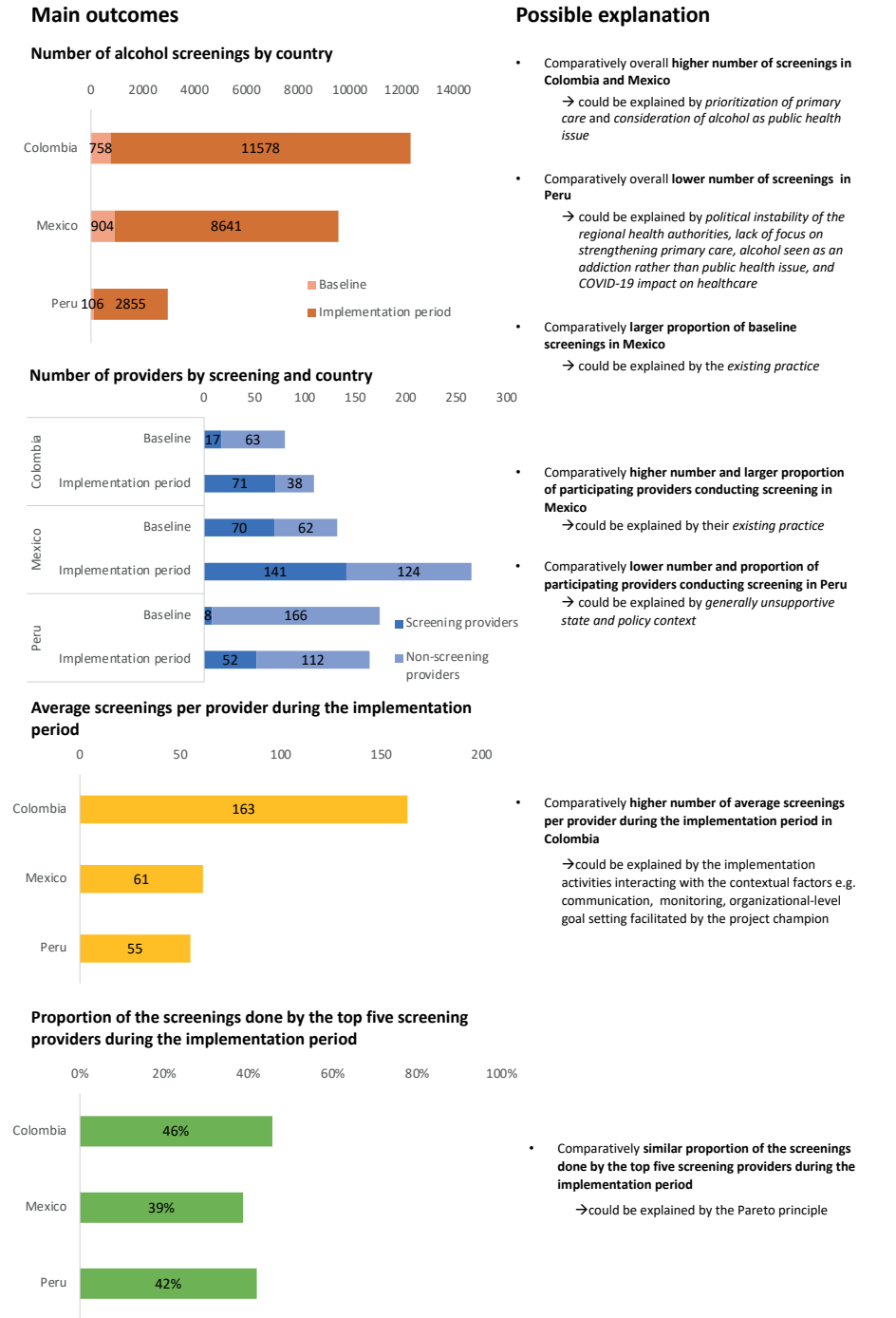
In the previous section, we presented the factors identified through qualitative data collection and their perceived direction of impact. In this section, we used those factors to help explain the quantitative results of the study. While the large majority of screenings should be primarily attributed to the implemented activities related to training and community support in each of the countries, which despite the local tailoring represented comparable amount of implementation dosage (for detailed list of implemented activities, see Appendix 3), the overall country differences can (at least partially) be attributed to the specifics of the country contexts.

Figure 3 presents some key outcomes in each of the countries and uses the identified policy factors to help explain the comparative country differences. The general positive factors possibly explaining the comparatively higher overall numbers of screenings in Colombia and Mexico were the prioritization of primary care and the consideration of alcohol as public health issue, meaning that the project fitted well within wider policy priorities, leading to support from the (regional) health authorities. On the other hand, the comparatively lower number of screenings in Peru could be explained by a combination of: a weak primary health care and implementation of a mental health reform redirecting the priorities away from primary care; the framing of alcohol as an addiction (leading to perception that that alcohol problems should be dealt by specialists on individual level, rather than by primary care providers), general political instability in the country which trickled down to regional health authorities, and the COVID-19 bringing the already under-resourced healthcare system to the brink of collapse.

In Mexico, the existing alcohol practice and guidelines (official standards stipulating inclusion of alcohol use in patient's medical file), could explain both the comparatively high number of providers conducting screening, as well as the high number of screenings at baseline; – providers were (at least occasionally) already using the instrument in their daily practice. When considering the average number of screened patients however, we can observe that Colombian providers on average screened a much higher number of patients compared to their Mexican and Peruvian counterparts. One possible explanation of this finding could be that in case of Colombia, the community support-related activities implemented as part of SCALA (such as involving an individual in an influential position as a project champion, regular communication with providers through in-person contact, setting targets and monitoring screening numbers, and small financial incentives for the highest screening providers), could have contributed to the higher average number of screened patients per provider, and ultimately to the highest number of patients screened (despite the lowest number of screening providers among the three countries).



**Figure 3.** Explanation of country differences in number of alcohol screenings and screening providers



Finally, there was one similarity between the countries: in all three, a small number of providers was responsible for conducting a large proportion of screening: the top five screening providers in each of the countries (representing 7%, 4% and 10% of all screeners respectively in Colombia, Mexico and Peru) screened 46% (Colombia), 39% (Mexico) and 42% (Peru) patients. This could be explained by the Pareto principle, a version of power law which in which the majority of consequences can be attributed to a small number of causes (Pareto, 2014).

### **Association with the outcome – time-bound factors**

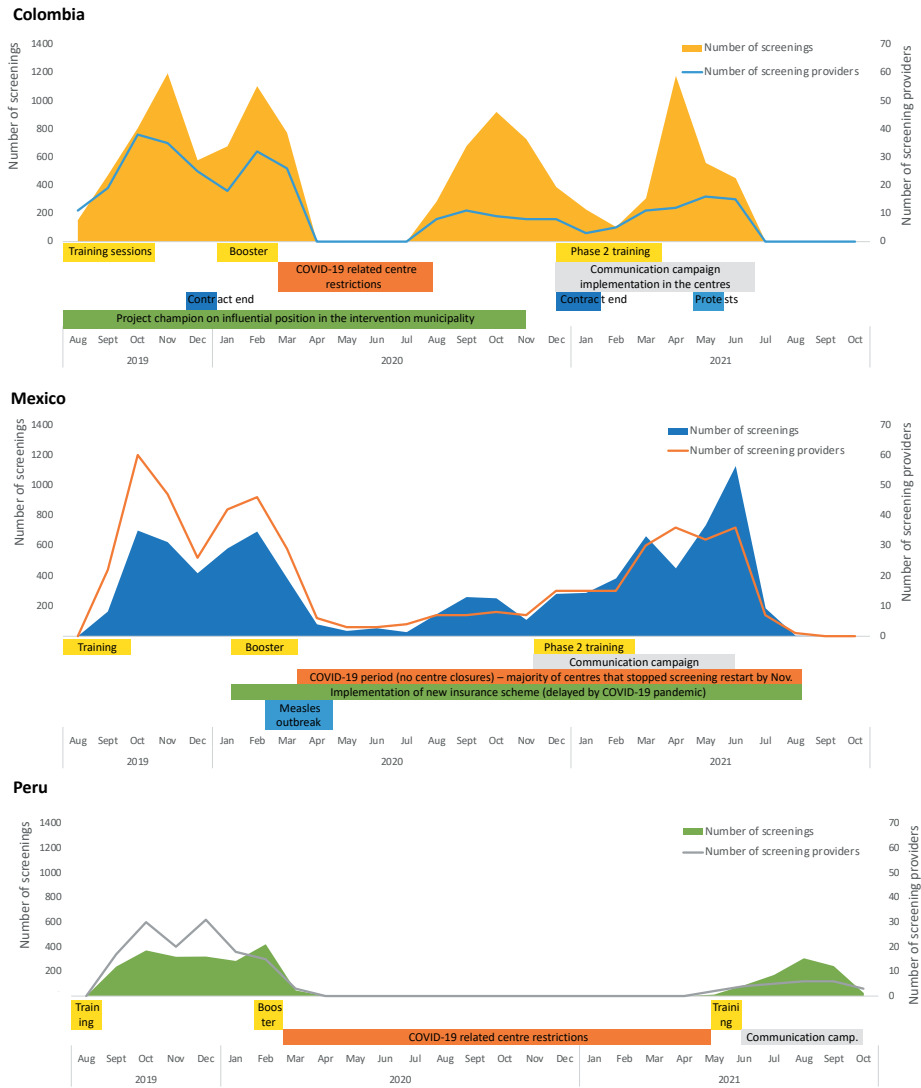
Figure 4 presents the monthly number of screenings and screening providers by country and overlays the time-bound factors identified in the Table 2 to see if they could contribute to the explanation of the screening numbers throughout the implementation period. Periods in which the providers were trained are also noted, as training has been shown to have impact on screening practices (Anderson et al., 2021), explaining the general increase in the screening uptakes after the training period.

In Colombia, a decrease in the number of providers and screenings were observed in December and January every year, which may be due to the end of contracts as described above (although the decrease in December can also be partially attributed also to holiday-related decreased patient attendance). Between March and August 2020, providers were not screening because of COVID-19 related restrictions. After restarting the project in August 2020, screenings again increased, until November 2020 when a decrease can be observed after the departure of the project champion. This was mitigated by the next round of training (as well as community support activities described in the previous section), and the number of screenings culminated in April 2021, with further decreases possibly related to the anti-governmental protests (as described in Appendix 2) starting at the end of April and continuing in May, in combination with a new COVID-19 wave.

In Mexico, there were fewer external factors influencing the monthly trajectory of screening. After the training and booster session-related increases in screening numbers in the first months of the implementation period, the number of screenings started decreasing in March 2020, likely due to a combination of preparation for the COVID-19 pandemic and response to the measles outbreak. While small number of providers continued with screening in the early months of the pandemic, the number of screenings and screening providers only picked up with the next round of training. The subsequent increase could partially be attributed also to new providers joining the project after being employed due to the expansion of the new insurance scheme (INSABI, described in Appendix 2).

Finally, in Peru, COVID-19 had the greatest impact, making it impossible to conduct any alcohol screening between March 2020 and May 2021, due to the impact of the pandemic on the whole country and its healthcare system.

**Figure 4.** Month-by-month trajectory of screenings, the screening providers and influential events



## DISCUSSION

This paper describes the country and policy context of Colombia, Mexico and Peru, and explores which country and policy factors appear to have contributed to alcohol screening rates by the primary healthcare providers in these three countries.

Our findings reveal that the country factors did not substantially differ between the three countries in question, and were therefore unlikely to explain country differences in the alcohol screening numbers, apart from the political factors, such as general

political instability in Peru and (regional) governmental election leading to changes on the organizational level of the primary care centres in Colombia. Policy factors, on the other hand, especially existing practice, policy priorities and healthcare system structure were likely to contribute to country differences in the study outcome (alcohol screening numbers). External shocks (including COVID-19 pandemic) also negatively impacted the number of screenings.

In Colombia and Mexico, the policy context was overall supportive, facilitating the implementation of alcohol screening in primary care practice. Policy framing of alcohol as a public health rather than medical issue likely contributed to better acceptance of alcohol screening as a population health approach among the primary care providers and managers, which could explain our previous findings that doctors were more likely to both participate compared to other professional roles (nurses, psychologists etc.) (Kokole et al., 2022). Presence of national policy plans or programmes has previously been shown to facilitate implementation of mental health related programmes in primary care in low- and middle-income countries (Esponda et al., 2019). Another important factor was existing alcohol screening practice, which potentially explains the higher number of providers participating in Mexico, as they were already familiar with using AUDIT as part of their practice due to the official standards stipulating inclusion of alcohol use information in patient history. The existence of experienced providers also potentially explains the high levels of alcohol screening-related self-efficacy at baseline in Mexico compared to other participating countries, and its association with a higher likelihood of screening (Kokole, Jané-Llopis, et al., 2021). However, despite the existing practice, the average number of screenings per provider was similar in Mexico and Peru, potentially indicating the impact of commonly mentioned barriers such as lack of time in consultation on practice (Rosário et al., 2021). Alternatively, in Colombia, the comparatively smaller number of screening providers that contributed to the overall highest number of screenings suggests the exceptionally strong impact of the community support activities implemented as part of SCALA, and their interaction with both the wider environment and the organizational context. Despite the existence of the supportive policy context in the both Mexico and Colombia, however, effects of unforeseen events on the alcohol screening could still be noticed on smaller time-scale: disease outbreaks served to redirect providers work priorities in Mexico, and anti-government protests in Colombia led to decreased patient attendance. External shocks such as political events and disease outbreaks, have previously been identified to negatively impact the resilience of health workers and health systems (Sripad et al., 2021).

In Peru however, the context was very unsupportive already before COVID-19 pandemic hit due to a mix of political (instability among the regional health authorities) and policy related factors (decentralization of the healthcare system, lack of focus on strengthening primary care, and alcohol being seen as an addiction rather than a public health issue). This policy context also explains some of our previously published process evaluation findings, for example the perceived lack of guidelines and available

screening instruments as a barrier (Kokole, Mercken, et al., 2021) and higher proportion of participating and screening psychologists in comparison to other professional roles (Kokole et al., 2022). Furthermore, the lack of external encouragement to participate in the study, as well as lack of previous education in alcohol prevention provision, could explain their comparatively higher therapeutic commitment (Kokole, Jané-Llopis, et al., 2021) and very high appreciation of the training sessions (Kokole et al., 2022). More simply put, in this unsupportive environment, the Peruvian providers who ended up joining the SCALA study were those with higher intrinsic motivation to learn about the alcohol prevention provision, but less previous education in it.

### **Implications for research and practice**

The main implication of this study is the importance of considering the wider environment in which an intervention is to be implemented, especially when seeking to scale relatively novel healthcare practices. Several reviews have evaluated implementation strategies, both in the field of alcohol screening and other alcohol and mental health interventions (Louie et al., 2021; Piat et al., 2021; Williams et al., 2011), but found few or no implementation strategies targeting the wider environment, beyond the organization in which the implementation is taking place. This is likely because those factors are the hardest to target and influence with implementation strategies. Nevertheless, researchers and implementers should at least map the relevant characteristics, especially policy related factors (e.g. policy priorities related to the intervention, or structure and incentives of the broader healthcare system in case of a healthcare innovation) at baseline, and plan to capture any changes throughout the implementation phase. A related question is how should the assessment of the wider environment impact the attempts to scale-up; are the countries with identified as having an unsupportive implementation context automatically excluded, knowing that much more effort will be needed for a (comparatively) smaller output? We would advise against that, as scale-up should primarily be based on the need, followed by the availability of the resources. Examination of the wider environment (in combination with assessment of the local stakeholder network and locally relevant factors) can aid in knowing how to best use those resources and, in line with systems approaches, which leverage points should be targeted to achieve the largest change (e.g. Meadows, 1999).

A theoretical implication based on the examination of existing literature in this field is the need for greater clarity on how the term “context” is used. While all definitions (Moore et al., 2014; Nilsen & Bernhardsson, 2019; Pfadenhauer et al., 2017; Steckler & Linnan, 2002) include the wider environment, some are broader, and include also additional factors beyond the wider environment as described in the introduction (e.g. Moore et al., 2014; Nilsen & Bernhardsson, 2019). This can hinder search for the relevant literature, e.g. sometimes individual attitudes are already framed as “contextual factors” (Rogers et al., 2020). There is an increasing number of studies recognizing the importance of the wider environment, especially in low- and middle-income countries, but there is no consistent

term that is used across literature, terms “wider environment” (Nilsen & Bernhardsson, 2019), “macro context” (Willging et al., 2021) or simply “context” are used interchangeably.

## Limitations

The main limitation is that due to the explicit contextual nature of the research, it is not possible to generalize the findings to other settings. For example, while the country context was largely similar in the three Latin American countries and did not appear to contribute to country differences in this study, this might not be the case in multi-country studies with a differing country context. Furthermore, the identified general factors are not static and reflect the situation during the study period (in the years 2018-2021). Rather than providing absolute claims about the factors relevant across all contexts, our aim is to point towards categories to consider when implementing future interventions, as well as to provide an approach that can be used to assess the country and policy contexts and their contribution to outcome, which will inevitably show up in differing constellations in other studies. Related to this, the outcome data came from single regions rather than from the entire country, and the impact of the same contextual factors might be different in other regions within the same country. Secondly, the data collected for the qualitative part to certain extent reflected perceptions of the implementers in the three countries and might be therefore be criticized of for being overly subjective (especially the interpretation of the event impact, rather than the event itself). To mitigate this possibility, we interviewed at least two people in each country. Additionally, the results were analysed by a researcher not living in any of the studied countries, which provided an opportunity to balance the internal (in the countries) and external (outside the countries) perspectives. Integration with the quantitative outcome data also allowed us to confirm the hypothesized direction of the impact at least for some of the identified factors. Finally, in terms of the initial baseline context description, we had to limit our scope and decided to focus on certain set of country and policy factors, as it would be too time- and resource-intensive to consider all possible wider environmental factors. This means we may have missed the description of some baseline factors that could also be relevant for better situating our study. However, we allowed any additional factors to emerge with the subsequent qualitative investigation.

## Conclusion

Country factors could not explain the outcome differences between countries as the three countries were comparatively similar in many of the relevant dimensions. The only exception was political factors, which impeded alcohol screening, particularly in Peru. Policy factors such as the prioritization of primary care, framing alcohol as a public health issue, and existing alcohol screening practice, helped to facilitate the implementation of alcohol screening on a larger scale, as seen in Colombia and Mexico. External shocks (including COVID-19 pandemic) substantially and adversely affected alcohol screening. Wider environmental factors should be captured and monitored in future implementation interventions, and better conceptualized within the field of the implementation science.

## APPENDIX 1: COUNTRY AND POLICY FACTORS IN COLOMBIA, MEXICO AND PERU AT THE BEGINNING OF THE IMPLEMENTATION, AND THE IMPACT OF COVID-19

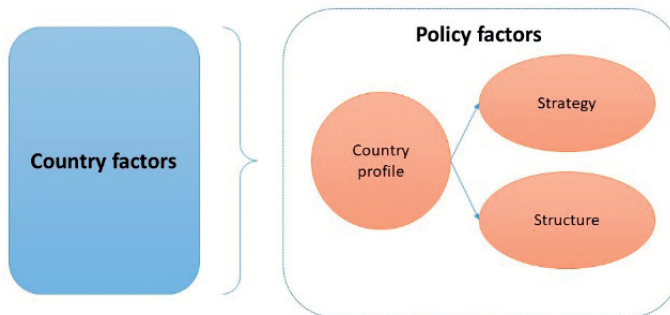
### Application of the framework

To aid with structuring and delineating the studied factors, we used the model proposed by Ysa et al (2014)<sup>2</sup>. This model has first been applied in the authors' analysis of governance of addictions in Europe, but in our case, the main categories have been taken as a starting point and adapted for the purposes of this study. The model (summarized in Figure A1) builds on two levels of analysis:

Country factors (named state factors in the original model), which are the general characteristics of the studied countries not directly related to alcohol screening (such as demographics, political structure, values etc.) - see Table A1 for a detailed list of all investigated factors). These are broader and might influence the policy factors.

Policy factors are more closely related to the studied intervention in question, in our case implementation of alcohol screening in primary care. They can be further grouped under policy profile of the country (e.g. existing consumption and guidelines), strategies (e.g. strategies and policy priorities) or structures within which the policy is embedded (healthcare system and primary care), all listed in Table A1.

**Figure A1.** Framework for the contextual analyses, adapted from Ysa et al.(2014)



As an additional layer, external shocks were added later (framed in Craig et al. (2018)<sup>3</sup> as unexpected events affecting the intervention) – in our case this was added to the framework later due to the onset of the COVID-19 pandemic during the implementation period.

2 Ysa, T., Colom, J., Albareda, A., Ramon, A., Carrión, M., & Segura, L. (2014). *Governance of addictions: European public policies*. OUP Oxford.

3 Craig, P., Di Ruggiero, E., Frohlich, K. L., Mykhalovskiy, E., White, M., Campbell, R., Cummins, S., Edwards, N., Hunt, K., Kee, F., Loppie, C., Moore, L., Ogilvie, D., Petticrew, M., Poland, B., Ridde, V., Shoveller, J., Viehbeck, S., & Wight, D. (2018). *Taking account of context in population health intervention research: guidance for producers, users and funders of research*. <https://doi.org/10.3310/CIHR-NIHR-01>

**Table A1.** Overview of the contextual, socio-political and economic factors at the onset of the scale-up and throughout the scale-up duration

	<b>Framework factor</b>	<b>List of contextual factors</b>	<b>Assessment methods</b>
Baseline	Country factors: socio political characteristics of the country	Country demographics Political system World Values Survey Corruption perception index GINI Index Democracy index Human Development Index	Desktop research
	Policy factors: country profile	Alcohol consumption Existing alcohol screening practice and guidelines	Desktop research
	Policy factors: structures	Organization of health system and primary care	Desktop research
	Policy factors: strategies	Alcohol policy National strategies Policy priorities	Desktop research
External shocks	COVID-19 pandemic	Epidemiology	Desktop research
		National restrictions	Interviews
		Impact on healthcare	Logbooks

Note: the information below has been compiled at the beginning of the project, and thus used also in other SCALA process evaluation papers for description of the context.

## Country factors

Table A2 presents the socio-political characteristics of the countries and shows that despite some difference in size and wealth (Mexico has larger population and higher GDP per capita), all countries are classified as upper-middle income according to the World Bank, and are placed in the high human development category according to the Human Development Index. The countries also have relatively similar values according to the World Values Survey, emphasizing the importance of religion, parent-child ties, deference to authority and traditional family values, as well as economic and physical security. Additionally, they score high on the Gini index (higher inequality), and are in the lower half among the world countries on the Corruption Perception Index (higher public sector corruption). This is corroborated also with the World Value Survey data (Wave 7, 2017-2020); 77.1% of Colombian, 78.9% of Mexican and 91.6% of Peruvian respondents consider that most or all of the country authorities are involved in some kind of corruption, and 70.2 of Colombian, 69.2% of Mexican and 88.2% of Peruvian respondents consider this for the local authorities as well.



**Table A2:** Socio-political characteristics of the countries

	Colombia	Mexico	Peru
<i>Main country demographics</i> <sup>1-3</sup>	<ul style="list-style-type: none"> <li>Population 48 258 494 (2018 data)</li> <li>51.2% female</li> <li>75.5% living in urban areas</li> <li>Age distribution: 24.0% under 15, 67% 15-64, 8.8% 65+</li> </ul>	<ul style="list-style-type: none"> <li>Population 119 938 473 (2015 data)</li> <li>51.4% female</li> <li>76.8% living in urban areas</li> <li>Age distribution (2010 data): 29.3% under 15, U64.4% 15-64, 6.3% 65+</li> </ul>	<ul style="list-style-type: none"> <li>Population 31 237 385 (2017 data)</li> <li>50.5% female</li> <li>81.9% living in urban areas</li> <li>Age distribution: 26.5% under 15, 65.3% 15-64, 8.2% 65+</li> </ul>
<i>Political system</i>	Presidential democratic republic, independent since 1810, most recent constitution since 1991	Unitary semi-residential representative democratic republic, independent since 1821, most recent constitution in 1993	Federal presidential representative democratic republic, independent since 1821, most recent constitution in 1917
<i>GDP per capita (2019)</i> <sup>4</sup>	6.508.127 USD	10.118.167 USD	7.046.788 USD
<i>Income level (World bank)</i> <sup>5</sup>	Upper-middle income	Upper-middle income	Upper-middle income
<i>IPSOS Happiness survey</i> <sup>a6</sup>	58%	59%	58%
<i>World Value Survey - Traditional vs. rational values</i> <sup>b7</sup>	0.34 (0.15)	0.43 (0.16)	0.39 (0.14)
<i>World Value Survey - Survival vs. Self-expression values</i> <sup>c7</sup>	0.43 (0.16)	0.44 (0.14)	0.40 (0.12)
<i>Democracy index</i> <sup>d 8</sup>	7.13 (flawed democracy)	6.09 (flawed democracy)	6.60 (flawed democracy)
<i>Corruption Perception Index</i> <sup>e 9</sup>	rank 96/180, score 37	rank 130/180, score 29	Rank 101/180, score 36
<i>GINI Index</i> <sup>f 10</sup>	0.770	0.777	0.788
<i>Human Development Index</i> <sup>g 11</sup>	rank 79/189, score 0.761 (high human development)	rank 76/189, score 0.767 (high human development)	rank 82/189, score 0.759 (high human development)

<sup>a</sup> % very happy + rather happy in Jun 2019 (global average 64%)

<sup>b</sup> (0 - more traditional to 1 - more secular) Traditional values emphasize the importance of religion, parent-child ties, deference to authority and traditional family values. Secular-rational values have the opposite preferences to the traditional values.

<sup>c</sup> (0 - more survival to 1 - more self-expression) Survival values place emphasis on economic and physical security. It is linked with a relatively ethnocentric outlook and low levels of trust and tolerance. Self-expression values give high priority to environmental protection, growing tolerance of foreigners, gays and lesbians and gender equality, and rising demands for participation in decision-making in economic and political life.

<sup>d</sup> index measuring pluralism, civil liberties, functioning of government, political participation and political culture (1-10). The countries are categorised in one of the four groups: full democracies, flawed democracies, hybrid regimes, and authoritarian regimes.

<sup>e</sup> The perceived levels of public sector corruption in 180 countries/territories around the world. (0- highly corrupt to 100 - very clean)

<sup>f</sup> Statistical measure of distribution intended to represent the income or wealth distribution of a nation, from 0 (0%) to 1 (100%), with 0 representing perfect equality and 1 representing perfect inequality.

<sup>g</sup> statistic composite index of life expectancy, education (Literacy Rate, Gross Enrolment Ratio at different levels and Net Attendance Ratio), and per capita income indicators, which are used to rank countries into four tiers of human development: Very high human development - 0.800 and above; High human development - 0.700-0.799; Medium human development - 0.550-0.699; Low human development - below 0.550

## Policy factors: country profile

**Alcohol consumption prevalence.** Table A3 displays some epidemiological factors, namely alcohol consumption prevalence, alcohol use disorder and depression rates. According to the World Health Organization (WHO estimations, amount of alcohol consumed is highest in Peru and lowest in Mexico, with all the countries having marked gender differences (males having higher consumption than females)). Peru also has the highest levels of heavy episodic drinking in the last 30 days. In all three countries, beer is the most consumed type of alcohol, followed by spirits and wine.

**Table A3:** Country profiles for alcohol consumption

	Colombia	Mexico	Peru
<i>Alcohol consumption per capita, (WHO, 2016-2018, 2019)<sup>12, 13</sup></i>	Total alcohol consumption 15+ (in litres of pure alcohol [95% CI]): 5.5 [4.4, 6.6]; Males: 8.8 [7.2, 10.9]; Females: 2.3 [1.8, 2.8]	Total alcohol consumption 15+ (in litres of pure alcohol [95% CI]): 5.0 [4.0, 6.3]; Males: 8.1 [6.5, 10.3]; Females: 2.2 [1.7, 2.7]	Total alcohol consumption 15+ (in litres of pure alcohol [95% CI]): 6.8 [5.7, 8.0]; Males: 10.4 [8.8, 12.3]; Females: 3.2 [2.7, 3.9]
	Consuming alcohol over the last 12 months: 38.3%; 51.7% males and 25.6 females.	Consuming alcohol over the last 12 months: 42.7%; 56.4% males and 29.4% females.	Consuming alcohol over the last 12 months: 53.2%; 67.1% males and 39.6% females.
	Heavy episodic drinking in last 30 days among drinkers (15+): 39.9% (51% M, 18.6% F)	Heavy episodic drinking in last 30 days among drinkers (15+): 42.5% (54.2% M, 20.8% F)	Heavy episodic drinking in last 30 days among drinkers (15+): 49.5% (62.8% M, 27.4% F)
	Consumption Beer > Spirits > Wine	Consumption Beer > Spirits > Wine	Consumption Beer > Spirits > Wine

**Existing practice.** In Colombia, the alcohol early detection recommendations are included as part of clinical practice guidelines that focus on detection and treatment of alcohol abuse and dependence on primary, secondary and tertiary care level<sup>14</sup> but there are no official standards.

In Mexico, the Official standards (defined as provisions that impose rules on human behaviour) establish the obligatory procedures that include asking questions on alcohol use and including this information in the patient's medical history specifically in the primary health care context. The Official Mexican Standard (NOM-028-SSA2-1999)<sup>15</sup>, in force since 2000, establishes the procedures and criteria for the prevention, treatment, and control of addictions in a mandatory manner throughout the country. This standard includes guidelines for prevention, early detection, treatment, and referral actions at primary health care centres. Since 2012, it became compulsory to include questions on tobacco and alcohol use in patients' medical history (NOM-004-SSA3-2012).<sup>16</sup> The instruments used are AUDIT (full) or CAGE. Additionally, there have been efforts to standardize the detection procedures, through the creation of Clinical Practice Guidelines on Prevention, screening and counselling for adolescents and adults in the primary care level.<sup>17</sup> However, little is known about their incorporation into routine procedures and the impact of this strategy on the population's health.

In Peru, no explicit guidelines for alcohol screening exist, but one of the indicators required by the *Multiannual Sector Strategic Plan (PESEM) 2016-2021 of the Health Sector as part of the objective to control non-communicable diseases*<sup>18</sup> is “Percentage of people with mental disorders and psychosocial problems detected in the mental health services”. Recommendations for providers to include alcohol screening are thus implicitly included in the general recommendation to perform mental health related screening (with alcohol use disorder considered as one of the mental health disorders).

### Policy factors: structures

In Table A4, the structure of healthcare system in each of the countries is presented, including how it integrates the primary care. Colombia and Mexico both have relatively recent reforms aimed at strengthening the primary care, and have higher health insurance coverage of their population and higher proportion of population with access to health services compared to Peru. The distribution of health professionals also differs between countries: Mexico has similar numbers of doctors as nurses/midwives, in Colombia there are more doctors, and in Peru, there are more nurses and midwives compared to doctors.

**Table A4:** Health care systems in Colombia, Mexico and Peru

	Colombia	Mexico	Peru
<i>Healthcare system, including PHC</i>	<i>Sistema General de Seguridad Social en Salud (SGSSS, General System of Social Security in Health). Most people are affiliated with the SGSSS through contributory regime (employed people) or the subsidized regime (low income population, indigenous, displaced, incarcerated population). There is also the special benefit regime (armed forces, teachers, and a state-owned petroleum company) and private insurance (voluntary).</i> <sup>19</sup>	Mexican health care works by three-tier system: a mix of social insurance schemes, a voluntary public programme for the uninsured, and private insurance. The IMSS covers private sector employees, and the Institute for Social Security and Services for State Employees (ISSSTE) covers federal government employees. Seguro Popular (later replaced by Instituto Nacional Salud para el Bienestar) is set up for those who don't qualify for IMSS tier due to financial reasons or because of pre-existing conditions. There is also option of private insurance. <sup>21</sup>	The Peruvian health care system is a four-tier system: comprehensive health insurance by the Ministry of Health, social security, armed forces and national police insurance, and private insurance. It is a decentralized system, with overall policies and frameworks being set on national level, and the regional and local authorities are responsible for implementation. <sup>22</sup>

Table A4: Continued.

	Colombia	Mexico	Peru
<i>Primary care</i>	In 2016, the new Comprehensive Health Care Model (Modelo Integral de Atención en Salud, MIAS) was introduced, with the aim to strengthen primary health care delivery and improve population access to healthcare, through increasing the responsibility and decision-making capacity of health teams. <sup>20</sup>	In 2015, a Comprehensive Health Care model (MAI) was introduced in order to standardize health care services, optimize health resources and infrastructure, and promote citizens' participation, which placed PHC one of the most important strategies for healthcare in Mexico. <sup>21</sup>	In 2003, the Ministry of Health formulated and formalized, the Comprehensive Health Care Model (Modelo de Atención Integral de Salud, MAIS), but with limited implementation. In 2011, Comprehensive Health Care Model based on Family and Community (Modelo de Atención Integral de Salud basado en Familia y Comunidad, MAIS-BFC) led to the reform of the care model to family health approach and several initiatives aiming to strengthen the first-care level <sup>22</sup> There are three categories of facilities that provide PHC: primary (I-1 to I-4), secondary (II-1 and II-2) and tertiary facilities. PHC is provided through a doctor-supported infrastructure; only in category I-1 facilities are supported by nurses, midwives or health technicians. <sup>34</sup>
<i>Health insurance coverage</i> <sup>23</sup>	In 2016, health insurance coverage reached 96% of the population, 26% lacked access to health services (data from 2016).	In 2014, health insurance coverage reached 80% of the population, 20% lacked access to health services.	In 2016, health insurance coverage reached 76% of population, 66% lacked access to health services.
<i>Health care expenditure as % of GDP</i> <sup>24</sup>	Based on 2017 data, health expenditure represented 7% of GDP, out-of-pocket payments counted as 16% of current health expenditure	Based on 2017 data, health expenditure represented 6% of GDP, out-of-pocket payments counted as 41% of current health expenditure. PHC Expenditure represented 44% of health expenditure.	Based on 2017 data, health expenditure represented 5% of GDP, out-of-pocket payments counted as 28 % of current health expenditure.
<i>Distribution of health professionals</i> <sup>25</sup>	In 2018, there were 108 499 medical doctors (21.85 per 10 000 population) and 66 095 nursing and midwifery personnel (13.31 per 10 000 population).	In 2017, there were 297 307 medical doctors (23.83 per 10 000 population) and 302 363 nursing and midwifery personnel (23.96 per 10 000 population).	In 2016, there were 40 352 medical doctors (13.05 per 10 000 population) and 78 048 nursing and midwifery personnel (24.40 per 10 000 population).

## Policy factors: strategies

Table A5 presents an overview of alcohol policy and the measures in the countries based on the information obtained from the Global Information System on Alcohol and Health (GISAH). The major difference between the countries is that Colombia and Mexico have adopted a written national policy on alcohol, including an action plan for policy implementation, whereas Peru does not.

**Table A5:** Overview of alcohol policy in the three countries (from WHO GISAH <sup>13</sup>)

	Colombia	Mexico	Peru
Adopted written national policy on alcohol	Yes, adopted 2010, revised 2016, adopted on national government level	Yes, adopted 2007, revised 2016, adopted on national government level	No
<i>Is there an action plan on alcohol (for implementation of written national policy on alcohol)?</i>	Yes	Yes	N/A (because of no written national policy)
<i>Central coordinating entity<sup>a</sup></i>	Health	Health	N/A (because of no written national policy)
<i>Framework in which the national policy is presented</i>	Specific alcohol policy	Specific alcohol policy, Integrated into substance abuse and general public health	N/A (because of no written national policy)
<i>Sectors represented in the national alcohol policy</i>	Health, Road Safety, Education, Other	Health, Road Safety, Law enforcement, Education, Other	N/A (because of no written national policy)

<sup>a</sup> whether a given country has a central coordinating entity for the implementation of the national policy on alcohol, which oversees the implementation of each specific area covered by the national alcohol policy

<sup>b</sup> in which ways the national government supports community action on alcohol (earmarked funds for community action, provision of technical tools tailored to communities, training programmes, community programmes and policies for subgroups at particular risk).

As mentioned in the table, both Colombia and Mexico have action plans on including alcohol, but in both alcohol is considered alongside other psychoactive substances (tobacco and illicit drugs), and the focus is on prevention in adolescents.<sup>26-28</sup> In Mexico, a new action plan has been accepted in 2020, but implementation has been delayed due to COVID-19.<sup>29</sup>

An important issue to mention is the mental health reform that has been taking place in Peru: mental health became increasingly important in policies and regulations since 2004, resulting in the promotion of a mental health reform within the national healthcare system. In 2012, Law 29889 was passed, with the aim to change delivery of mental healthcare. This included on the one hand strengthening the role of primary health care centres and general hospitals, but also establishing the Community Mental Health Centres (CMHCs), to support decentralization of mental healthcare from psychiatric hospitals to the community level.<sup>30</sup> The National Plan for the Strengthening of Community Mental Health 2018-2021<sup>31</sup> is used to guide the implementation. The main component of this reform is the establishment of CMHCs. The Ministry of Health's priority is to expand this network across the country. The centres provide

specialized ambulatory services to people of all ages, as well as people with substance use disorders. Specialized mental health teams at the CMHCs also provide training and in-service mentoring to general primary health care providers on the relevant topics.<sup>30</sup>

### **External shocks: COVID-19 pandemic**

*COVID-19 epidemiology:* Latin America was one of the regions most affected by the Covid-19 pandemic, both in terms of number of infections and mortality. In Mexico, the first case of COVID-19 was confirmed on February 28, 2020 and in both Colombia and Peru – on March 6, 2020. As of 30<sup>st</sup> August 2021, there were 4.91 million confirmed cases and 124 883 confirmed deaths in Colombia, 3.34 million cases and 258 491 deaths in Mexico, and 2.15 million cases and 198 269 deaths in Peru. In terms of deaths, Peru was hit the hardest with almost 6000 deaths per million people (5934), followed by Colombia (cumulatively approximately 2500 deaths per million people (2436), and Mexico with slightly less than 2000 deaths per million people (1984). It should also be taken into account that limited testing and challenges in the attribution of the cause of death means that the number of confirmed deaths may not accurately represent true number of deaths (seen also based on high case fatality rates, shown in Figure 3. On August 31<sup>st</sup> 2021, the (short term) case fatality rates were 2.50% in Colombia, 3.87% in Mexico and 3.80% in Peru.<sup>32</sup>

The countries had different trajectories since COVID-19 started, as evident Figure 1 and 2 (7-day rolling average of daily new confirmed number of cases/deaths per million people). Peru had two large waves, the first of which lasted from the pandemic beginning in March 2020 until late 2020, and the second one which peaked in April 2022, and was one of the hardest hit countries overall, with large excess mortality (Figure 2). Additionally, in Peru COVID-19 was happening alongside a big political crisis (further described below). Colombia's largest wave was actually the third one, in the spring/summer 2021, happening against a backdrop of nationwide protests and political instability in the country (also further described below). Mexico had three "smaller" waves (per capita), but due to the size of the country, these still led to large death toll.<sup>32</sup>

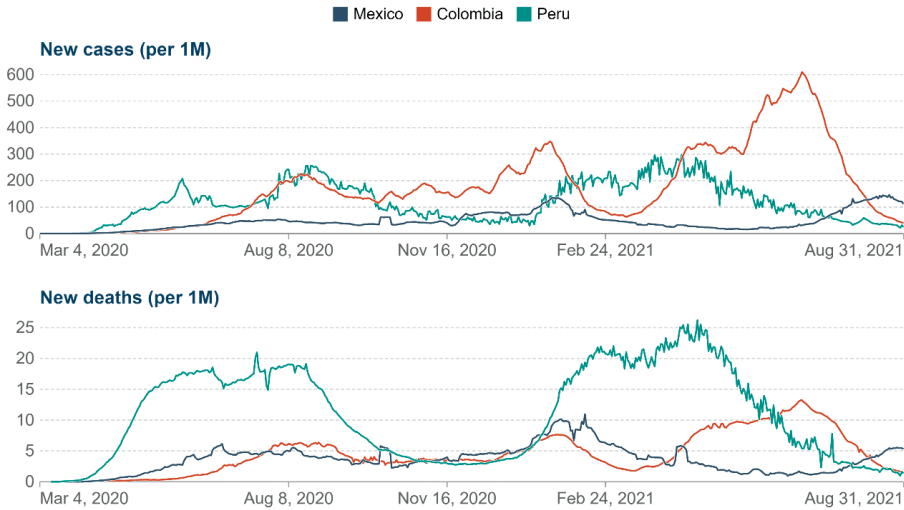
### **Colombia: National and regional COVID-19 related measures**

Mandatory national lockdown took place in Colombia since mid-March. Through Decree 417 of March 17, 2020, the state of economic, social and ecological emergency was declared throughout the national territory, in order to avert the serious public calamity that affects the country due to the COVID-19. Decree 538 of 2020 was also established in which the measures relevant for the health sector were provided, still within the framework of the State of Economic, Social and Ecological emergency established by Decree 417.

**Figure A2:** Seven-day rolling average of daily new confirmed number of cases/deaths in Colombia, Mexico and Peru (source: John Hopkins University CSSE COVID-19 Data, Our World in Data website)<sup>4</sup>

### Daily new confirmed COVID-19 cases & deaths per million people

7-day rolling average. Limited testing and challenges in the attribution of cause of death means the cases and deaths counts may not be accurate.



Source: Johns Hopkins University CSSE COVID-19 Data

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[note: information on developments received from logbooks and project documentation, hence no references]

### Colombia: COVID-19 impact on healthcare, including primary health care

In the first part of the lockdown (May to June 2020), PHCCs have stopped regular consultations except for those who need pre-birth controls and follow-up of some chronic diseases. Patient attendance at Health Centres for other conditions, other than COVID-19, has decreased significantly, partly due to fear of infection. In addition, the services were focused on treating respiratory and COVID-19 infections. In June 2020, some services have gradually opened, following the established protocols. However, the service for some age groups (such as pregnant women, the elderly and children) was limited. Likewise, the dentistry service was enabled only for emergencies. Priority consultation was enabled in most of the venues, but with low attendance. There were also adjustments in the hours of service of health professionals. In Soacha (intervention arm), the hospital

4 Our world in data, 2022: <https://ourworldindata.org/explorers/coronavirus-data-explorer?zoomToSelection=true&time=2020-03-01..2021-08-31&uniformYAxis=0&pickerSort=asc&pickerMetric=location&Metric=Cases+and+deaths&Interval=7-day+rolling+average&Relative+to+Population=true&Color+by+test+positivity=false&country=COL~MEX~PER>

suspended the face-to-face consultation, only offering the priority consultation service (dentistry, optometry, vaccination, cervical and breast cancer detection). The centre began the implementation of teleconsultation and home care for chronic patients. However, there have been problems in the implementation of these services (e.g. 80% of phone numbers were not correct). In Funza / Madrid (control arm), the hospital suspended face-to-face services in all health centres and only priority consultation was enabled. Therefore, the professionals who were not linked to these services were also suspended. After the initial lockdown the regular consultation resumed and were not stopped again until the end of the implementation period, although patient attendance at the centres decreased.

### **Mexico: National and regional COVID-19 related measures**

The Mexican federal government did not impose national-level measures, instead they relied on a public service announcement campaign to promote social distancing and hand washing. On March 23<sup>rd</sup>, the National Day of Healthy Distance (Jornada Nacional de la Sana Distancia) was first implemented. On March 30<sup>th</sup>, the Declaration of Sanitary Emergency due to force majeure was released because of COVID-19 (Official Gazette of the Federation, 03/31/2020). Each federal entity determined additional measures to those implemented at the federal level. In Mexico City, restrictions have been established on the movement of vehicles, the closing of some subway stations and other public transportation, the use of compulsory face masks in public spaces, the sale of alcohol has been restricted in some municipalities and the temporary suspension of beer production was implemented. As of June, no mandatory Social Isolation was declared, the population was only invited to stay at home. Institutional and commercial public spaces were closed, only those considered essential are open. In August 2020, the government was no longer asking people to stay home but the use of face masks was mandatory. The epidemiological traffic light was established, which was updated every week according to the number of confirmed cases and hospital use by municipality. In August, in Mexico City this was Orange, which allowed the opening of public spaces at 30% of their capacity. As of end November, the epidemiological traffic light in Mexico City was still set to orange, with a trend of increase in cases. The number of cases increased and there was red traffic light since before Christmas 2020, but there was not a complete lockdown. From February 15<sup>th</sup> 2021, the epidemiological traffic light for Mexico City changed to orange, which implied a reduction in infections and hospital occupancy rate. For this reason, the reopening of various economic activities has been authorized. Mexico City had been in green status until mid-June 2021, and in yellow since then, and is now in orange status as of end August 2021.

### **Mexico: COVID-19 impact on healthcare, including primary health care**

During the first wave (period between March and May 2020), the services were focused on treating respiratory and COVID-19 infections, although there was no complete shutdown of primary care. There was intense mobility of personnel among the providers that are



working the PHCCs, and patient attendance at Health Centres for other conditions, other than COVID-19, has decreased significantly, partly due to fear of infection.

Because of the National Day of Healthy Distance, the number of health personnel who work in health centres and the number of patients who came to the consultation decreased. The staff that remained in the PHCC did not go to work every day, but the days they did, they had more activities to cover. The PHCCs have focused on the follow-up report of COVID-19 cases and epidemiological reports. Services that are were considered essential, such as laboratories, dental and psychological services, were suspended or reduced not to promote the fluctuation of patients and staff in health centres. Telephone service was implemented to attend to patients with symptoms of COVID-19, who are monitored at home by health centre staff. The PHCCs were focusing their activities on the priority consultation and the general consultation was suspended. As of June 2020, health personnel at risk for a previous condition work from home. The activities in the health centres focused on the prevention and care of COVID-19 (application of diagnostic tests, sampling, face-to-face consultations, by phone, home monitoring). The influx of patients was reduced by approximately 50%. As of August 2020, Health personnel at risk continued to work from home (possible reincorporation October 1), remaining health personnel went to work normally. The activities in the health centres have as a priority the prevention and attention to COVID-19 (continues taking samples, consultations and monitoring of patients) in addition to gradually starting to resume other programs. The influx of patients has increased but not at normal levels. As of end November, some centres (especially in harder hit areas) were still primarily focusing on COVID-19 detection and prevention. In some centres, the number of available staff decreased due to the suspension of work in public servants over 65, pregnant or with chronic diseases. From 15<sup>th</sup> February 2021, the vaccination of general population began, therefore primary healthcare centres received this additional task.

### **Peru: National and regional COVID-19 related measures**

Mandatory national lockdown was introduced since mid-March. On March 15, the government issued the Supreme Decree N° 044-2020-PCM to declare state of emergency, with the following measures: border closures, general lockdown, prohibition of travel, closure of schools, universities, churches and non-essential businesses. The state of emergency declared by Supreme Decree No. 008-2020-SA, was extended from September 8, 2020 for a period of ninety calendar days. Peru extended its national emergency until September 30 and prolonged a lockdown in some of the areas worst affected by the coronavirus. In Department of Lima some of the restrictions have been lifted since 1<sup>st</sup> July 2020. The wearing of facemasks in public places was mandatory and social distancing measures were in place. Peru began the phase 4 of economic reactivation on 1st October 2020, which relaxed some measures: partial operations of stores and restaurants; but bars and cinemas remained closed. With start of 2021, the number of infections started increasing again in a second wave. New lockdown was introduced in Lima/Callao on January 31<sup>st</sup>.

**Peru: COVID-19 impact on healthcare, including primary health care**

An order from the Ministry of Health regulated how PHCCs provided care to patients. Only emergency and COVID-19 care could be provided, all other activities were suspended. Outpatient care has been suspended in also in primary health facilities. Pickets for urgent care and suspicious cases with COVID-19 have been established. Providers over 60 years of age and those with risk are ordered to work from home (telework in follow-up of health programs, disease monitoring, tele consultations), younger providers can work in small groups in the centres, psychologists can work from the centres twice per week. Providers working from home could only do consultations via cell-phone, and providers working in the centres could do it face-to-face or via cell phone. Care was limited to certain groups of patients: infected with COVID-19 and relatives. There was continued care for parental planning (pregnant women, etc), people infected with TBC, and people with mental health problems. Patients receiving care can either call their provider (via WhatsApp) or visit the centre. Following this order, providers were not expected to talk about alcohol with their patients at all because there are other priorities. In general, the health system in Peru had great difficulties with coping with COVID, with number of cases bringing it to the end of collapse. Places like Lima and Callao did not have sufficient ICU beds, along with a lack of medical oxygen due to the high demand, in addition to the high cost. With respect to PHCCs, a number of health care services were no longer provided throughout the pandemic period (not only in the first lockdown) and access was severely restricted. Along the pandemic emergency care services, have been prioritized for COVID-19 along with pregnant women care, vaccinations to children under 5 years, tuberculosis treatment services and family planning programs. Additionally, Peru emerged as one of the countries with greatest number of doctors dying because of COVID.

## References

1. DANE (2018). Censo nacional de población y vivienda. Proyecciones de población. Available from: <https://www.dane.gov.co/index.php/estadisticas-por-tema/demografia-y-poblacion/proyecciones-de-poblacion> [accessed 23.9.2021]
2. INEGI (n.d.). Banco de indicadores, 2015. Available from <https://www.inegi.org.mx/app/indicadores/?t=0070&ag=09014##D00700060> [accessed 23.9.2021]
3. INEI (2017). Censos nacionales 2017: XII Censo de Población, VII de Vivienda y III de Comunidades Indígenas. Sistema de Consulta de Base de Datos. Available from: <http://censos2017.inei.gov.pe/redatam/> [accessed 23.9.2021]
4. International Monetary Fund (2019). World Economic Outlook Databases. Available from: <https://www.imf.org/en/Publications/SPROLLS/world-economic-outlook-databases> [accessed 23.9.2021]
5. World bank (n.d). World Bank Country and lending groups. . Available from: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519> [accessed 23.9.2021]
6. IPSOS (2020) Global happiness report. Available from: <https://www.ipsos.com/sites/default/files/ct/news/documents/2020-10/global-happiness-2020-report.pdf> [accessed 23.9.2021]
7. Haerper, C., Inglehart, R., Moreno, A., Welzel, C., Kizilova, K., Diez-Medrano J., M. Lagos, P. Norris, E. Ponarin & B. Puranen et al. (eds.). 2020. World Values Survey: Round Seven–Country-Pooled Datafile. Madrid, Spain & Vienna, Austria: JD Systems Institute & WVSA Secretariat. Available from: <https://www.worldvaluessurvey.org/WVSEVSJoint2017.jsp> [accessed 23.9.2021]
8. Democracy Index (2019). Economy Intelligence Unit. Available from: <https://www.eiu.com/n/campaigns/democracy-index-2019/> [accessed 23.9.2021]
9. Transparency International (2019). Corruption perception Index 2019. Available from: [https://images.transparencycdn.org/images/2019\\_CPI\\_Report\\_EN.pdf](https://images.transparencycdn.org/images/2019_CPI_Report_EN.pdf) [accessed 23.9.2021]
10. World Population Review (n.d.). GINI Coefficient by country. Available from: [https://worldpopulationreview.com/country-rankings/gini-coefficient-by-country\\_](https://worldpopulationreview.com/country-rankings/gini-coefficient-by-country_) [accessed 23.9.2021]
11. United National Development Programme (2020). Human Development Index (HDI). Available from: <http://hdr.undp.org/en/content/human-development-index-hdi> [accessed 23.9.2021]
12. WHO Global Health Observatory (n.d.) Alcohol, total per capita (15+) consumption (in litres of pure alcohol) with 95%CI. Available from: [https://www.who.int/data/gho/data/indicators/indicator-details/GHO/alcohol-total-per-capita-\(15-\)-consumption-\(in-litres-of-pure-alcohol\)-with-95-ci](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/alcohol-total-per-capita-(15-)-consumption-(in-litres-of-pure-alcohol)-with-95-ci) [accessed 23.9.2021]
13. WHO (n.d.) Global Information System on Alcohol and Health (GISAH). Available from: <https://apps.who.int/gho/data/node.gisah.GISAHhome?showonly=GISAH> [accessed 23.9.2021]
14. Ministerio de Salud y Protección Social (2013). Guía de práctica clínica para la detección temprana, diagnóstico y tratamiento de la fase aguda de intoxicación de pacientes con abuso o dependencia del alcohol - 2013 Guía No. 23. Available from: [http://www.saludpereira.gov.co/attachments/article/326/pi%20Guia%20profesionales\\_ALCOHOL\\_final%20julio17.pdf](http://www.saludpereira.gov.co/attachments/article/326/pi%20Guia%20profesionales_ALCOHOL_final%20julio17.pdf) [accessed 23.9.2021]
15. Norma Oficial Mexicana NOM-028-SSA2-2009 para la prevención, tratamiento y control de las adicciones (2009). Available from: <https://www.mindbank.info/item/3823> [accessed 23.9.2021]
16. Norma Oficial Mexicana NOM-004-SSA3-2012 del expediente clínico [Internet]. 2012. Available from: <https://www.cndh.org.mx/DocTR/2016/JUR/A70/01/JUR-20170331-NOR26.pdf> [accessed 23.9.2021]

17. Prevención, detección y consejería en adicciones para adolescentes y adultos en el primer nivel de atención. [http://www.biblioteca.cij.gob.mx/Archivos/Materiales\\_de\\_consulta/Drogas\\_de\\_Abuso/Articulos/Consejeria-Adicciones.pdf](http://www.biblioteca.cij.gob.mx/Archivos/Materiales_de_consulta/Drogas_de_Abuso/Articulos/Consejeria-Adicciones.pdf) [accessed 23.9.2021]
18. Ministerio de Salud Peru (2016) Plan Estratégico Sectorial Multianual 2016-2021. Available from: <https://cdn.www.gob.pe/uploads/document/file/1201078/plan-estrategico-sectorial-multianual-pesem-2016-2021-del-sector-salud.pdf> [accessed 23.9.2021]
19. OECD (2015). *OECD Reviews of Health Systems: Colombia 2016*. Paris: OECD Publishing.
20. WHO (2017). Primary health care systems (PRIMASYS): case study from Colombia, abridged version. Geneva: World Health Organization.
21. WHO (2017). Primary health care systems (PRIMASYS): case study from Mexico, abridged version. Geneva: World Health Organization.
22. WHO (2017). Primary health care systems (PRIMASYS): case study from Peru, abridged version. Geneva: World Health Organization.
23. Báscolo, E., Houghton, N., & Del Riego, A. (2018). Lógicas de transformación de los sistemas de salud en América Latina y resultados en acceso y cobertura de salud. *Revista Panamericana de Salud Pública*, 42, e126.
24. WHO (n.d.) Global Health Expenditure database. Available from: <https://apps.who.int/nha/database/> [accessed 23.9.2021]
25. WHO (n.d.) Global Health Workforce Statistics, the 2018 update, Available from: <https://apps.who.int/gho/data/node.main.HWFGRP?lang=en> [accessed 23.9.2021]
26. Ministerio de Salud y Protección Social Colombia (2014) Estrategia nacional de respuesta integral frente al consumo de alcohol en Colombia. Available from: <https://docs.bvsalud.org/leisref/2018/02/115/col-estrategia-nacional-de-alcohol.pdf> [accessed 23.9.2021]
27. Ministerio de Salud y Protección Social Colombia (2014) Plan nacional para la promoción de la salud, la prevención y la atención del consumo de sustancias psicoactivas, 2014-2021. Available from: <http://www.odc.gov.co/Portals/1/publicaciones/pdf/consumo/politica-consumo/OD1012014-plan-nacional-prevencion-consumo-sustancias-psicoactivas.pdf> [accessed 23.9.2021]
28. Secretaría de Salud Mexico (2013). Programa de Acción Específico: Prevención y Atención Integral de las Adicciones 2013-2018. Available from: [https://web.archive.org/web/20190711064403/http://www.conadic.salud.gob.mx/pdfs/programas/PAE\\_2015.pdf](https://web.archive.org/web/20190711064403/http://www.conadic.salud.gob.mx/pdfs/programas/PAE_2015.pdf) [accessed 23.9.2021]
29. Secretaría de Salud Mexico (2021). Programa de Acción Específico de Salud mental y Adicciones 2020-2024. Available from: [https://www.gob.mx/cms/uploads/attachment/file/626039/PAE\\_CONASAMA\\_26\\_3\\_21.pdf](https://www.gob.mx/cms/uploads/attachment/file/626039/PAE_CONASAMA_26_3_21.pdf) [accessed 23.9.2021]
30. Toyama, M., Castillo, H., Galea, J. T., Brandt, L. R., Mendoza, M., Herrera, V., ... & Miranda, J. J. (2017). Peruvian mental health reform: a framework for scaling-up mental health services. *International journal of health policy and management*, 6(9), 501.
31. Ministerio de Salud Peru (2018). Plan Nacional De Fortalecimiento De Servicios De Salud Mental Comunitaria 2018-2021. Available from: <http://bvs.minsa.gob.pe/local/MINSA/4422.pdf> [accessed 23.9.2021]
32. Ritchie, H., Mathieu, E., Rodés-Guirao, L., Appel, C., Giattino, C., Ortiz-Ospina, E., ... & Roser, M. (2020). Coronavirus pandemic (COVID-19). *Our World in Data*. Available at: <https://ourworldindata.org/coronavirus> [accessed 23.9.2021]

## APPENDIX 2: DESCRIPTION OF THE FACTORS INFLUENCING SCALA IMPLEMENTATION AS IDENTIFIED THROUGH QUALITATIVE RESEARCH

### **Characteristics of populations in the participating municipalities**

Certain population characteristics in the participating municipalities affected how easy or difficult it was for the providers to discuss topics of alcohol and mental health. In Colombia, a large proportion of population in the intervention municipality (Soacha) was displaced (e.g. migrants from Venezuela, rural areas) or only temporary residents. This meant that there was less opportunity for the providers to establish longer-term relationships with the patients attending the centres, which would facilitate discussion of topics such as alcohol or mental health. In Peru, one of the main issues related to the population characteristics from the beginning on was that one centre was in a disadvantaged area with high crime rates, therefore the staff was familiar with violence and attacks on providers also in the health facilities. The providers noted that some of the patients did not want to be asked any extra questions apart from the issue they were presenting (with some being upfront about that in an aggressive manner), which was discouraging them from asking questions on alcohol and mental health.

### **Political factors**

The political factors had the most profound impact on the project implementation in Peru. For the last couple of decades, the political system in Peru has been plagued by corruption<sup>5</sup>, and during the project implementation period there was great political instability with president being impeached for alleged corruption and a new round of elections began which polarised the country<sup>6</sup>. This instability on national level was also reflected in instability in institutions relevant for SCALA implementation on the regional level. In the relevant regional health authorities (which were key to give access to the PHCCs for the project implementation), five health directors changed over the course of two years in the beginning stages of SCALA project. Given these abrupt changes of

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- 5 In 1993, then-president Alberto Fujimori changed the Peruvian constitution, which transformed Peru's economic model and promoted private sector development at the expense of state's role. The new constitution facilitated promotion of the interests of the economic elite, leading to many corruption scandals - all of the presidents after Fujimori were tried for corruption
  - 6 In March 2018, Pedro Pablo Kuczynski was forced to resign due to a corruption affair, and was succeeded by Martin Vizcarra. During his term, Vizcarra was vocal about Congress (dominated by the Fujimorists (populist right party) and other right-wing parties) obstructing the political process, with many politicians purportedly blocking reforms and protecting their relatives by seeking immunity. This led to weakened government and instability on ministry level, with over thirty cabinet changes over two years, and culminated in Vizcarra trying to dissolve the congress in late 2019 and calling for snap elections in January 2020. In November 2020, the Congress impeached the president on the corruption charges and "permanent moral incapacity". Part of the Peruvian population saw this as coup and series of protests erupted across the country, leading also to deaths and injuries. New election was scheduled for April 2021, in which two candidates gathered most votes and qualified for next round (although still only with 18.5% of all eligible votes between them): Keiko Fujimori, daughter of ex-president Alberto Fujimori, and Pedro Castillo, primary school teacher without significant previous political visibility. This split the country, which was seen by the results of the elections in June 2021: Pedro Castillo won with a minimal margin (50.13% vs 49.87%) (information collated from: Migus, R. (2021). Can Pedro Castillo unite Peru? *Le Monde Diplomatique*; Migues, R. (2021). Time to reform the Peruvian system. *Le Monde Diplomatique*; Chaparro, P.A. (2019). *Amerique latine: l'exception peruvienne*. *Le Monde*.)

leadership, it was very difficult to ensure any kind of continuity as the key contact person that could help with entering the system was constantly changing and all the meetings and already achieved agreements had to be sought anew constantly. Due to the political instability (and exacerbated by COVID-19 pandemic, as described below), the project implementers were faced with a lot of short-term thinking from people in positions of power, as there was a lot of focus on day-to-day survival of institutions, which required enormous effort for many parts of the project implementation.

Political changes at the national and regional level also affected project implementation (and implementation in the centres) in Colombia by trickling down to relevant institutions, however in the end not to detrimental effect. In December 2019, the 4-year term of the mayors and governors ended, and with January 2020, the elected officials changed. This also led also to change of leadership and the associated personnel in the participating centres (as the new ruling party gave priority to their own officials). The project champion, who was involved with promoting the project in the hospital and the associated centres had to leave her position by April 2020 because of those changes associated with the election results. However, due to COVID-19 those changes were postponed, and the project champion could stay in her position for longer (until November 2020), further exerting influence and promoting the project among the providers.

### **Existing guidelines and practice**

In Colombia, guidelines for alcohol screening existed at the beginning of the project, but we found no indication that they were used in practice by the providers from the participating centres. Some of the providers were familiar with the AUDIT test from their previous training. In Mexico, there is an obligation to include information on alcohol use in patient's medical history, which stipulates AUDIT use, so many providers were already previously familiar with the instrument and applying it in practice. Due to the existing normative, it was also made easier for the providers to use the clinical package developed by SCALA project as simpler alternative to existing procedures. In Mexico, the existence of the official standards facilitated the use of SCALA clinical package in practice. Furthermore, it was possible to register some of the detections (especially AUDIT), and depression in mental health personnel as productivity, giving additional incentive to providers. In Peru, the majority of providers had no experience with alcohol screening or AUDIT. This meant that in training, more time was needed to explain the care pathway and the instruments, and some providers needed longer to understand how to apply them in practice.

### **Policy priorities**

The current policy priorities in the countries had marked impact on how the SCALA project as a whole could be implemented from the beginning (e.g., issue of recruitment) to the end (e.g., issue of sustainability). This pertained not only to nominal policy priorities (as written down in the national strategies and action plans), but also to their

actual implementation. As further described below, onset of COVID-19 overshadowed many of the previously established policy priorities.

In terms of alcohol policy, there was a difference between Colombia, and Mexico (with alcohol being considered as a public health issue, as seen through the existence and framing of the alcohol policy), and Peru (alcohol still framed under addictions rather than as a public health problem, with no standalone alcohol policy). Furthermore, both in Colombia and Mexico, the focus of the project on the primary care was aligned with the primary care as a policy priority – both of the countries had a relatively recent introduction of new models in primary care namely (Modelo Integral de Atención en Salud, (MIAS) in Colombia and Modelo Atención Integral (MAI) in Mexico), both focusing on strengthening primary care. This meant that the national and regional authorities were more willing to consider and support SCALA. On the PHCC level however, this also implied that alcohol screening had to compete with other initiatives (other Promotion and Prevention programs in Colombia, or various health campaigns, such as National Day of Public Health, cancer campaigns and screening (breast, cervical cancers), information week on alcoholism and woman in Mexico). In Peru, the project fit well with the (nominal) government priorities, as one of the main aspects of the mental health reforms ongoing for the several past years, was strengthening the role of primary health care centres and general hospitals, including in detection of mental health disorders (also addiction related). In practice however, the main focus of the government was its own survival on one side (especially on the regional level, given all the political instability with the many changes), and establishment of the Community Mental Health Centres (CMHCs) in practice. The Mental Health National Office of the Ministry of Health had as a priority to expand from 100 to 200 CMHCs nationally, and was not addressing the strengthening of mental health teams at primary health centres. The SCALA intervention site (Callao) was focused on expanding to four community mental health centres from the existing one during the project period. This meant there were very little resources for other projects and SCALA had very low priority already before the start of the pandemic, which further decreased once the health system was brought to the brink of collapse from the COVID-19 related burden. In Peru, one of the main competing priorities for the providers in primary care was tuberculosis detection.

### **Healthcare system**

One of the main issues in all the three countries that were embedded in the healthcare system was turnover and rotations which led to providers who were trained to deliver SCALA protocol to leave the centre due to the end of their contract. This was an issue especially in Colombia, where many young doctors, trained to perform alcohol screening, left the centre at the end of the year (at the end of their *año rural*, a year of practice in a rural area), as their contract expired and they were often transferred to a different centre which was not participating in the SCALA project. In Mexico, an issue that emerged during the recruitment phase for a small subset of providers – among those who were unionized, there was a higher resistance to participation in any additional activities that

would increase their workload. Collaboration with one of the centres also diminished because there was too much union pressure (and the leader did not want to further strain the relationships). Furthermore, establishment of Instituto Nacional Salud para el Bienestar (National Institute Health for Wellbeing, INSABI, new insurance scheme expanding the healthcare coverage) in the beginning of 2020 had two implications for the SCALA project, especially in the later phase: firstly, it meant new providers were being hired in some centres, some of those which joined the project, and secondly, the increased coverage of the population would also mean increase of patient attendance in the centre. In Peru, the fragmentation of the healthcare and vertical integration meant there was a single possible entry to the system (regional health authorities) in order to get access to the PHCCs during the recruitment phase, which made it hard to access the centres, especially in combination with the previously described changes in leadership. Also, as previously mentioned, the healthcare system was undergoing a restructuring during the project time, with a focus on establishment of Community Mental Health Centers, but that left little to no human capacity for the other types of actions.

### **Impact of COVID-19**

Next to the other factors described, the COVID-19 pandemic had large implications for implementation of alcohol screening in practice. In Colombia and Peru, the application of tally sheets was suspended mid-March as the PHCCs refocused the limited resources on emergency and COVID-19 care, and patient attendance dropped significantly. In Mexico, there was no instruction to suspend the tally sheet collection, and each centre was free to organize and define its possibilities of continuing the application. As a result of this, some providers in some centres have continued with applying AUDIT-C. In Colombia and Mexico, restart on project level took place between August and December 2020, whereas in Peru, this was not possible before June 2021 due to continued restrictions on primary care level.

The COVID-19 pandemic redirected the work priorities in the providers in the centres in all three countries – initially many of the providers were told to stay at home, especially the ones at risk, and later the providers returning to the centres were tasked with COVID-related activities, such as detection, prevention, and (later) vaccination. In Mexico, the medical interns, which were some of the biggest drivers of SCALA before, were not allowed to work in the centres anymore. The pandemic also had impact on providers' own mental health: Providers have expressed concerns and stress due to COVID-19 infections and having to deal with infected patients. On the other hand, the COVID-19 pandemic also had an impact on centre attendance: in all the three countries, the patient attendance decreased. In Mexico, pandemic also led also to a change in the socio-economic profile of the patients: while previously only the most disadvantaged population was considered to attend these centres, after the pandemic began, people from other socioeconomic levels who previously did not attend these health centres approached, especially later for purposes of COVID testing and vaccination campaigns.



### **Other external shocks**

Beyond COVID-19, some other unforeseen events happened during the implementation period. Mexico City experienced a measles outbreak in February 2019, meaning the providers in centres had another competing priority (e.g. surveillance or vaccination)<sup>7</sup>. In Colombia, including Soacha, the intervention municipality, anti-government protests erupted in April and May 2021.<sup>8</sup> The violent protests had an impact on the ability and willingness of the general population to attend the centre by disrupting the public transport services, and general threat of violence on the street.

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- 7 In Mexico City, 137 new measles cases were confirmed between February and June 6 2020, most of them until beginning of April 2020 (Information from <https://www.who.int/emergencies/disease-outbreak-news/item/2020-DON267>; [http://www.bmhim.com/frame\\_esp.php?id=179](http://www.bmhim.com/frame_esp.php?id=179)[http://www.bmhim.com/frame\\_esp.php?id=179](http://www.bmhim.com/frame_esp.php?id=179))
- 8 A large nation-wide protest started on April 28<sup>st</sup> 2021 in opposition to a tax reform bill proposed by the president Ivan Duque. The nominal aim for the reform was to reduce Colombia's fiscal deficit, but in practice it would negatively affect the already the impoverished middle- and lower classes. This was only one event in long line of strikes and protests, with earlier protests happening in late 2019 and September 2020 due to income inequality, corruption, police brutality and various proposed economic and political reforms. The protests also turned violent by police killing and injuring protestors, which further fuelled the subsequent demonstrations. The protests blocked the public transport in many cities and overall stopped the public life (summarized from Allen, L. & Long, G. (2021). Colombia's growing repression. *Le Monde Diplomatique*.)



### APPENDIX 3: DESCRIPTION OF THE IMPLEMENTED SCALA ACTIVITIES

**Table A7:** Implementation of the main elements of SCALA implementation strategies (based on information in the project report)

		Colombia
<b>Clinical package</b>		<p><i>Pre-COVID:</i> Development and tailoring of the short and standard clinical package, including care pathway, provider booklet, patient leaflet (for patients with low risk alcohol consumption), patient booklet (for patients with high-risk alcohol consumption, depression leaflet).</p> <p><i>Phase 2:</i> Changes made to the clinical package and its application:</p> <ul style="list-style-type: none"> <li>• Revision of the care pathway (all patients get screened for depression rather than just heavy drinking ones)</li> <li>• All arms use the short clinical package.</li> </ul>
<b>Training</b>		<p><i>Pre-COVID:</i> Development and tailoring of the training package: the training manual, handouts and materials (including evaluation questionnaire), the training course presentations, the training modelling videos, and the TNT (training new trainers) sessions (including slide deck, training materials as above, 2-day in-person course, follow-up 'reminder' videos).</p> <ul style="list-style-type: none"> <li>• 16 delivered sessions (training August-November 2019 + booster January-March 2020)</li> <li>• Training length 1.5 hours for Arm 2 and 3, 2 hours for Arm 4, 2 hours for booster</li> <li>• 74 providers attending at least one session (67 attending at least one session up to M5)*</li> </ul> <p><i>Phase 2:</i></p> <ul style="list-style-type: none"> <li>• 7 additional sessions in December 2020-March 2021, all in person</li> <li>• 34 providers attending</li> </ul>
<b>Community support action</b>	<b>Community advisory board</b>	<p>Input and feedback regarding the community actions, particularly the communication campaign; ways to overcome barriers in implementation and stimulate facilitators; enduring the sustainability of the project after its finalization.</p> <p><i>Pre-COVID:</i> recruitment and at least 2 meetings</p> <p>Phase 2: once in 6-12 months, according to projects' needs and emerging issues.</p>
	<b>Project champion</b>	<p>One project champion was highly involved in the implementation of programme in the intervention municipality and in the direct communication with the centres (coordinator of community affairs of the local hospital).</p>

Mexico	Peru
<p><i>Pre-COVID:</i> Development and tailoring of the short and standard clinical package, including care pathway, provider booklet, patient leaflet (for patients with low risk alcohol consumption), patient booklet (for patients with high-risk alcohol consumption, depression leaflet).</p> <p><i>Phase 2:</i> Changes made to the clinical package and its application:</p> <ul style="list-style-type: none"> <li>• Revision of the care pathway (all patients get screened for depression rather than just heavy drinking ones)</li> <li>• All arms use the short clinical package.</li> </ul>	<p><i>Pre-COVID:</i> Development and tailoring of the short and standard clinical package, including care pathway, provider booklet, patient leaflet (for patients with low risk alcohol consumption), patient booklet (for patients with high-risk alcohol consumption, depression leaflet).</p> <p><i>Phase 2:</i> Changes made to the clinical package and its application:</p> <ul style="list-style-type: none"> <li>• Revision of the care pathway (all patients get screened for depression rather than just heavy drinking ones)</li> <li>• All arms use the short clinical package.</li> </ul>
<p><i>Pre-COVID:</i> Development and tailoring of the training package: the training manual, handouts and materials (including evaluation questionnaire), the training course presentations, the training modelling videos, and the TNT (training new trainers) sessions (including slide deck, training materials as above, 2-day in-person course, follow-up 'reminder' videos).</p> <ul style="list-style-type: none"> <li>• 26 delivered sessions (training August 2019-October 2019 + booster January - March 2020)</li> <li>• Training length 2 hours for Arm 2 and 3, 4 hours for Arm 4, 2 hours for booster</li> <li>• 153 providers attending at least one session (139 attending at least one session up to M5)*</li> </ul> <p><i>Phase 2:</i> Development of the online training</p> <ul style="list-style-type: none"> <li>• 10 additional sessions between December 2020-March 2021; 2 online, 8 in person</li> <li>• 53 providers attending</li> </ul>	<p><i>Pre-COVID:</i> Development and tailoring of the training package: the training manual, handouts and materials (including evaluation questionnaire), the training course presentations, the training modelling videos, and the TNT (training new trainers) sessions (including slide deck, training materials as above, 2-day in-person course, follow-up 'reminder' videos).</p> <ul style="list-style-type: none"> <li>• 33 delivered sessions (training August 2019 + booster February-March 2020)</li> <li>• Training length 2 hours for Arm 2 and 3 and 4 hours for Arm 4, 2 hours for booster</li> <li>• 162 providers attending at least one session (146 attending at least one session up to M5)*</li> </ul> <p><i>Phase 2:</i> Development of the online training</p> <ul style="list-style-type: none"> <li>• 1 online session in June 2021</li> <li>• 3 providers participating</li> </ul>
<p>Input and feedback regarding the community actions, particularly the communication campaign; ways to overcome barriers in implementation and stimulate facilitators; enduring the sustainability of the project after its finalization.</p> <p><i>Pre-COVID:</i> recruitment and at least 2 meetings</p> <p><i>Phase 2:</i> once in 6-12 months, according to projects' needs and emerging issues.</p>	<p>Input and feedback regarding the community actions, particularly the communication campaign; ways to overcome barriers in implementation and stimulate facilitators; enduring the sustainability of the project after its finalization.</p> <p><i>Pre-COVID:</i> recruitment and at least 2 meetings</p> <p><i>Phase 2:</i> once in 6-12 months, according to projects' needs and emerging issues.</p>
<p>Two project champions participated continuously in the link between health authorities and health providers. Project champion 1 obtained the authorization to use the Mexico City Health Services logo for its incorporation into the project materials. Project champion 2 facilitated the training sessions; encouraged the participation of the providers; provided support in the collection of information during the implementation period.</p>	<p>One project champion who provides suggestions for the design and implementation of the SCALA Community support Plan. In phase 2, the champion continued to provide support, particularly in the delivery of online training session in SCALA phase 2 of implementation.</p>

Table A7: Continued.

<b>Colombia</b>	
<b>Adoption mechanisms</b>	<ol style="list-style-type: none"> <li>1. The benefits for patients and simplicity of the intervention were emphasized in face-to-face meetings with PHCC managers and providers.</li> <li>2. In implementation month 3, in face-to-face meetings with providers, the number of patients whose alcohol consumption was measured and was communicated to providers.</li> <li>3. A local university became engaged in the project and provided input on adaptations of the intervention.</li> <li>4. In implementation month 3, in face-to-face meetings with providers, the highest screening rates per PHCC were highlighted.</li> <li>5. Organizational issues are monitored through discussions with PHCC to identify any issues</li> </ol>
<b>Support systems</b>	<ol style="list-style-type: none"> <li>1. Training packages were slightly shortened, in order to fit into the PHCCs' schedules and rules of attendance of providers.</li> <li>2. One formal meeting was organized in the first 2 months of implementation to identify difficulties regarding the brief intervention and the care pathway. It was identified that providers still needed support to get used to the exact pathway. In response, three short support videos were created, about how to fill in the tally sheets, how to mark the boxes, and what is the needed material to be delivered for each case.</li> <li>3. Meetings for feedback with providers were held every 2 months, in which the screening rates are communicated. Recognitions in the form of symbolic incentives (\$5 vouchers) were given to the 8–9 providers with the highest measurement rates.</li> <li>4. Informal exchange of experiences among participating providers.</li> <li>5. Mentions of the programmes' potential sustainability during meetings with PHCC managers and providers</li> </ol>
<b>Communication campaign</b>	<p><i>Pre- COVID:</i></p> <p>~ 50 posters have been placed in the participating Centre's and in public places such as cafeterias, drugstores and small stores. Additionally, monthly WhatsApp messages regarding the project and/or importance of alcohol screening are sent to providers</p> <p><i>Phase 2:</i></p> <p>104 posters were distributed in the 9 PHCCs in the intervention municipality, in waiting rooms and consultation rooms. 42 posters were placed nearby PHCCS (grocery stores, pharmacies, and restaurants) in the intervention municipality. 200 to 500 brochures were distributed monthly in each PHCC in the intervention municipality. Promotional videos were shown on screens in waiting rooms of the PHCCs in the intervention municipality, as well as on 28 screens of the hospital in the intervention municipality: every Monday to Friday, during December 2020 to June 2021 (07:00 am - 5:00 pm). Additionally, local research partners organized a webinar in May 2021 called "Visiones nacionales e internacionales del proyecto SCALA" ("National and international insights of the SCALA project"), with speakers from Ministries of Health and Justice, Gobernación de Cundinamarca, Instituto Nacional de Psiquiatría de México (SCALA Mexico) and Nuevos Rumbos (SCALA Colombia).</p>

Mexico	Peru
<ol style="list-style-type: none"> <li>1. The benefits for patients and simplicity of the intervention were emphasized in face-to-face meetings with PHCC managers and providers.</li> <li>2. In face-to-face meetings with providers, the large number of patients that can benefit if screening and brief advice are implemented in the PHCC was reaffirmed.</li> <li>3. A poster presentation held at an Annual Research Meeting of the National Institute of Psychiatry; a presentation about the role of alcohol screening was held on the National Day against harmful use of alcoholic beverages 2019.</li> <li>4. Informing PHCCs about the percentage of screenings carried out by each PHCC, on a monthly basis.</li> <li>5. Organizational issues were monitored through discussions with PHCCs to identify any issues</li> </ol>	<ol style="list-style-type: none"> <li>1. Collaboration with the Mental Health Program of the Ministry of Health, in order to promote the adoption of the programme in the implementation municipality.</li> <li>2. The large number of patients who benefit from the project is communicated to providers, focusing on three subgroups with higher alcohol risk in the intervention municipality: (a) persons in treatment of tuberculosis, (b) persons at risk of sexual transmitted diseases, (c) persons in violent families.</li> <li>3. In order to engage the municipality, 35 community promoters have been trained in methods for working in alcohol prevention.</li> <li>4. Lists were created for each PHCC using WhatsApp to promote the identification of champions.</li> <li>5. Organizational issues are monitored through discussions with PHCCs; one issue identified is that providers seem very busy</li> </ol>
<ol style="list-style-type: none"> <li>1. Materials and activities of the training sessions (i.e. role playing, presentations and analysis of the videos) were adjusted to the needs of each PHCC.</li> <li>2. Face to face meetings with providers, during which they agreed that no additional tailoring was needed.</li> <li>3. Reporting each month to PHCCs' the number of screenings; informing the PHCCs every three months on the progress of the global project. Recognitions in the form of certificates were given to the PHCC and the most outstanding providers each quarter.</li> <li>4. Exchange of experiences via video calls, among participating providers.</li> <li>5. Mentions of the programmes' potential sustainability during meetings with PHCC managers and providers.</li> <li>6. Continuous communications maintained with the municipal health authorities to promote the application of screening and brief advice</li> </ol>	<ol style="list-style-type: none"> <li>1. Additional materials were provided for any providers who did not have previous information about the programme.</li> <li>2. Face-to-face meetings with providers, during which they agreed that no additional tailoring was needed.</li> <li>3. Reporting each month to PHCCs the number of screenings.</li> <li>4. Informal exchange of experiences among participating providers.</li> <li>5. Exploring the option of involving Community Mental Health Services, who could train other centres in the future</li> </ol>
<p><i>Phase 2:</i> ~ 800 posters have been placed in 8 of the 9 participating PHCCs in the intervention municipality and in other public places such as: grocery stores, stationers' shops, restaurants, parks and public markets. Additionally, ~500 pocket calendars for providers in Centres, ~250 pocket calendars for patients, ~350 desk calendars, ~350 pocket calendars and ~40 pin buttons have been distributed in Centres, to providers and patients. In phase 2 of implementation, 30 SCALA posters were placed in 8 PHCCs in the intervention municipality, in waiting rooms and consultations rooms. Several posters were placed in three community centres and in vaccination centres (the exact number of the places posters is unknown). Each of the 10 PHCCs in the intervention municipality received monthly: 400 brochures for patients, as well kits for providers (including a desk calendar, antibacterial gel and wipes and KN95 mask). IMP also held two public presentations, on SCALA experience and risks of alcohol consumption in pregnancy.</p>	<p><i>Pre- COVID:</i> ~800 posters have been placed in the participating Centres of the intervention municipalities and in other public places, such as markets, universities, bus-stops. Three promotional videos have been displayed in participating Centres. Additionally, monthly WhatsApp messages regarding the project and/or importance of alcohol screening were sent to providers.</p> <p><i>Phase 2:</i> 24 SCALA posters were placed in 8 PHCCs in the intervention municipality, in waiting rooms and consultations rooms. 140 posters were placed in Markets, Bus stops, Grocery stores and Street corners in the intervention municipality. Promotional videos were shown daily in all PHCCs in the intervention municipality. In order to motivate the local markets to disseminate the audios, local research partners organized a special training for local market leaders (June 30, 2021). The meeting addressed the topic of community leaders in Alcohol control Approximately 68 markets disseminating audios about 10 times a day. Additionally, the Regional Health office has disseminated several communication materials developed in SCALA on their website and social media channels.</p>



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# **CHAPTER 7**

## **General discussion**

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## DISCUSSION AIM

This thesis aimed to identify the factors influencing the implementation of alcohol screening by the primary health care providers in Colombia, Mexico and Peru, based on the process evaluation of a quasi-experimental study evaluating the effectiveness of implementation strategies to increase alcohol screening in primary care. This chapter first synthesises the key results presented in the thesis and situates them in relation to each other and other findings. Next, the theoretical considerations are discussed, such as the suitability of the used frameworks and analysis from the complex systems perspective. Finally, the methodological considerations and limitations are presented, followed by the implications for future research and practice.

## SYNTHESIS AND REFLECTION ON THE RESULTS<sup>9</sup>

### Appropriateness of the intervention

In Chapter 2, we assessed the stakeholders' perception of the appropriateness of alcohol screening and brief advice. The results showed that the approach was considered appropriate to reduce heavy alcohol use in primary health care, and a range of providers (general practitioners, nurses, psychologists and social workers) were considered suitable for its delivery. The stakeholder appropriateness rating was slightly lower in Peru compared to Colombia and Mexico. Considering the broader context, as evaluated in Chapter 6, the explanation for this can be sought in the structure of the healthcare systems in the three countries. Colombia and Mexico are further with their primary care reforms implementation (Atun et al., 2015), which means preventing non-communicable diseases and promoting lifestyle factors on the population level fits better within the primary healthcare setting. In the Peruvian healthcare system, on the other hand (at least at the time of the intervention), only psychologists were trained for issues such as alcohol and mental health screening. Thus this might be the reason alcohol screening and brief advice in primary care was seen as appropriate by a slighter lower proportion of respondents compared to Colombia and Mexico. Additional baseline questionnaire analysis undertaken for the process evaluation<sup>9</sup> also revealed that the participating providers considered that healthcare providers are more likely to have disease model training in Peru than in Colombia and Mexico (Kokole, 2021). This could reflect the different framing of alcohol in the policies (from addiction as opposed to public health perspective, as described in Chapter 6). However, with the ongoing implementation of mental health reform in Peru (Toyama et al., 2017), the primary care setting is likely to become more fitting for discussions about alcohol, although the transformation might take some time.

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9 In the SCALA process evaluation working package, more data was collected and analysed than presented in this thesis. The results will thus be discussed both in relation to broader scientific literature and where relevant in light of the remaining process evaluation findings, as presented in the Deliverable for the European Commission.

Given that the alcohol screening and brief intervention approach originates in the Western context (McCambridge, 2021), a relevant appropriateness-related consideration is also the cultural appropriateness and fit. In Chapter 2, the survey results showed that key stakeholders did not perceive the approach's lack of cultural appropriateness as a barrier. Considering that the need for such an approach is likely to be elevated in the future due to the projected alcohol consumption increase in middle-income countries (Helble & Sato, n.d.), including Latin America (Manthey et al., 2019), this is an encouraging finding. Nevertheless, there are two issues which could be addressed for alcohol screening and brief interventions to fulfil its full potential in the Latin American context. The first concerns the potential provider stigma when it comes to working with patients with alcohol problems. Alcohol-related stigma has shown up in previous interviews with providers in the studied countries (Cavero et al., 2018; Shannon et al., 2021) and has been mentioned by some providers in the unpublished qualitative data from the project process evaluation, especially in Peru. The second is the relationship between the health professional – especially the doctor – and the patient. While in the Western context, especially in Europe, there is an increased emphasis on equal relationship and joint decision-making, in the Latin American context, the relationship between the two traditionally had a more paternalistic character, where the doctor is seen as the authority providing all the answers (Yennurajalingam et al., 2013). The nature of the intervention provided in the SCALA project, including elements of motivational interviewing, might fit with the transition into giving the patients more autonomy about their health decisions within the reformed primary care setting. As there is increased attention to capacity building of professionals in low and middle-income countries (Nadkarni et al., 2022), the training curricula could consider including these topics when tailoring the training in these three countries and other similar settings to ensure a better fit of the training.

## Factors influencing alcohol screening implementation

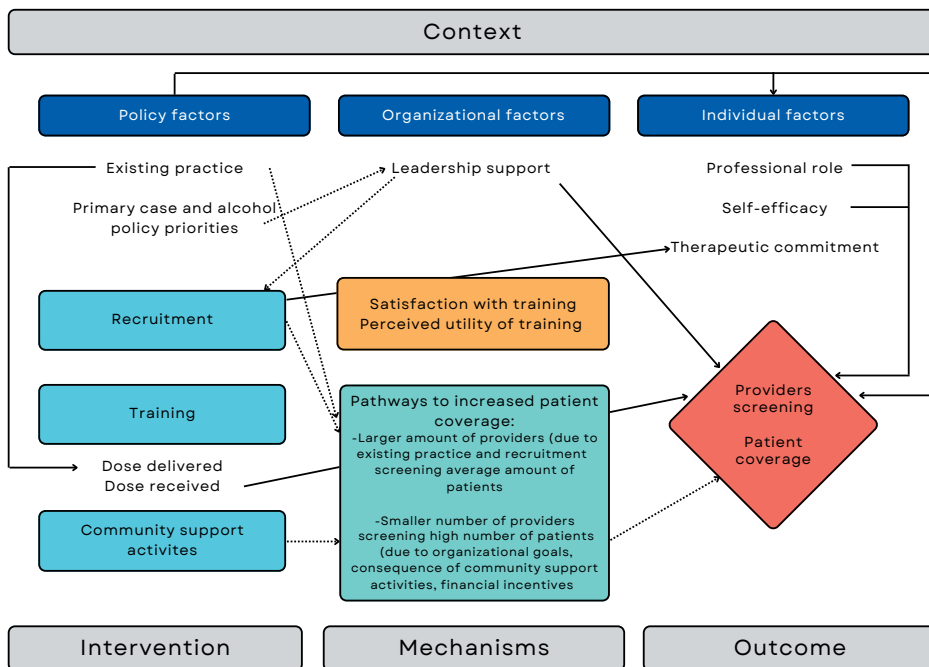
Chapter 2 investigated the perceived barriers to implementing alcohol screening and brief advice from the perspective of the key stakeholders in the three countries before the start of the intervention implementation. In contrast, Chapters 4, 5, and 6 evaluated the actual factors (both hindering and facilitating) impacting the outcome (alcohol screening) throughout the implementation period.

In Chapter 2, the factors such as patients' normalised perception of their heavy drinking, lack of ongoing support for providers, difficulty in accessing referral services, and lenient alcohol control laws were the highest-rated barriers in all three countries. Intervention-related barriers were the lowest rated, although there were country differences related to lack of clarity of guidelines on screening and brief advice and lack of screening instruments, with Peruvian respondents perceiving those as a barrier to the largest extent. Barriers related to individual health professionals' characteristics were neither among the highest nor the lowest rated, although this assessment differed by the

professional role of the responder (doctors lower ratings compared to psychologists and other roles).

Chapters 4, 5 and 6 examined the actual factors influencing whether the providers initiated conversation on alcohol with their patients - and results show that the factors related to training (dose received), individual (professional role, self-efficacy), organizational level (leadership support), and wider environment (existing practice, alcohol and primary care policy priorities) influenced the alcohol screening in primary care practice. The results from Chapter 4 also indicate that approximately half of the trained providers still did not do any alcohol screening after attending the training, showing that training alone is insufficient to lead to behaviour change in all the providers. The impact of training on provider behaviour also differed by country, as in Colombia higher proportion of trained providers conducted alcohol screening compared to Peru. The factors influencing providers' screening, as identified in Chapters 4, 5 and 6, and their interrelations (Bulthuis et al., 2020) are summarised in Figure 1. As the results of the individual studies have been discussed in their own respective chapters, this section will focus on bringing them together to consider the larger picture of how they are interrelated.

**Figure 1.** Summary of the key findings



*Note.* The full line represents findings presented in individual chapters; the dotted line represents the connections hypothesised in the discussion after consideration of the results from all the chapters.

Based on the stakeholder responses, one of the crucial conclusions in Chapter 2 was higher relative importance of factors related to the wider environment and organization as barriers compared to the individual- or intervention-related factors. The results from the actual implementation presented in Chapters 4, 5 and 6 showed that at least some factors at every level were facilitating or hindering the providers' alcohol screening. However, the following sections will argue that factors related to the wider environment (specifically policy) and organization influenced the outcome both directly and through influencing the individual level factors, including participants' interaction with the intervention, but not the other way around. Furthermore, the policy and organizational factors to a larger degree contributed to the final patient coverage. Therefore, the implementation results concurred with the initial stakeholder perceptions, but also provided further nuanced elaboration.

### **Factors influencing providers' screening behaviour and their interaction with the outcome**

The impact of the organizational (leadership support) and policy factors (e.g. existing practice, policy priorities) was already demonstrated in Chapters 5 and 6. The importance of those factors was previously detected also in high-income settings in a project similar to SCALA, testing the effectiveness of a range of implementation strategies in European countries (Keurhorst, Heinen, et al., 2016). In the discussion, the authors also observe that the (negative) influences from the macro level (social and policy context) could counteract the positive effects of the implementation strategies on the micro (individual professional) and meso (organizational) level (Keurhorst, Heinen, et al., 2016). Several studies and reviews have previously found the importance of organizational and policy factors in the middle-income context (Cavero et al., 2018; Esponda et al., 2019; Ronzani et al., 2009), as well as interlinkage between factors from different levels (Bulthuis et al., 2020).

When considering all the results from different chapters together, several findings point to policy factors influencing individual-level factors (both motivational and professional role-related) and their relationship with alcohol screening. For example, the existing policy to include alcohol use as part of patient's medical history in Mexico (Chapter 6) likely influenced the higher screening-related self-efficacy of the Mexican providers at the beginning of the intervention (Chapter 5), and the structure of healthcare systems and positioning of the alcohol (treatment) within the primary care (Chapter 6) led to differences of suitability and willingness of different professions to both participate in the study and apply alcohol screenings (Chapter 4).

Furthermore, while the participants' responses to training (in terms of satisfaction and perceived utility) overall did not distinguish between the screening and non-screening providers, the country-level analyses (Chapter 4) showed the difference in Peru. Namely, the participants who were more satisfied with the training and perceived it as more useful for their practice were also more likely to conduct screening after their

training. The Peruvian screeners were also more likely to attend the offered booster sessions. Furthermore, while not part of this thesis, analyses for the process evaluation project deliverable<sup>9</sup> demonstrated that it was only among the Peruvian providers that the training impacted self-efficacy. The key implication of these findings is that in an environment with unsupportive policy and organizational context (as described in detail in Chapter 6), but with motivated, but inexperienced providers (as shown in Chapter 5), intervention (in our case training) and the participants' interaction with it may be especially important in influencing the screening behaviour. However, despite the overall high appreciation of the training, the proportion of the trained providers doing any screening was nevertheless lower in Peru than in Colombia and Mexico, already before the COVID-19 pandemic (Chapter 4).

In summary, both individual and intervention-related factors have played a role in influencing provider behaviour, but as shown in this thesis, they can be expressed differently in varying contexts and be influenced by policy factors, thus confirming the applicability of the realistic evaluation's notion of context-mechanisms-outcome constellations (Pawson & Tilley, 2004).

### **b) Factors relevant for increasing patient coverage**

To expand the reach of the intervention ("horizontal scale-up") (Ramani-Chander et al., 2022) and achieve population-level impact (as described in introduction (Manthey et al., 2019)), it is necessary to look beyond only behaviour on the provider level. An important metric is increased patient coverage – thus a high number or proportion of screened patients. In this thesis, the exact operationalisation of the outcome measure differs per chapter, with only one of the chapters looking at the absolute number of screened patients: Chapter 4 described whether providers did any alcohol screening as the outcome data, Chapter 5 considered the rate of screening on provider level (proportion screened out of all consulting patients), and Chapter 6 examined the absolute numbers of screening providers and screened patients throughout the implementation period.

From the findings on the absolute number of screened patients and the average number of patients per screening provider (as presented in Chapter 6), it can be observed that we encountered two main pathways to increase patient coverage (beyond having all the participating providers screening all their patients, which is not realistic in practice), with potentially different activating mechanisms. One pathway to increase overall patient coverage was through increasing the number of providers screening their patients (e.g. larger number of providers screening the average number of patients, as was the case in Mexico). The increased patient coverage was due to a higher number of providers participating in the study in the first place, and the policy standard that made it mandatory to include information on alcohol use in the patient history - thus, policy change is necessary for this mechanism to be activated.

The second pathway to increasing overall patient coverage was by increasing the number of patients screened by each provider (e.g. smaller number of providers screening a higher number of patients on average, as was the case in Colombia). In this case, the combination of the project champion being in an influential position which aided the organizational goal setting (on the number of screenings) and overall organizational support, intense community support activities and financial incentives, likely led to a high number of screened patients, as seen in Chapter 6. Key factors leading to this mechanism being activated were thus a stronger combination of intervention efforts (community support or activities) and organizational support.

Finally, the case of Peru showed that even with very motivated providers (as indicated by high therapeutic commitment in the questionnaire data), patient coverage will ultimately be lower if there are fewer screening providers in the first place (even if they are doing the best they can within the given circumstances). Thus relying on individual motivation alone will likely not lead to a high number of screened patients when the broader context is unsupportive.

In summary, one of the pathways for increasing patient coverage relied on (national level) policy implementation, and the other on the organizational level support and activities. The results presented in this thesis thus suggest that only focusing on targeting individual motivational factors of the providers will be less successful for a widespread scale-up if the broader (policy, organizational) context is unsupportive, even when providing support in the form of training and booster sessions which is very well received by the providers. However, should the individual motivational factors nevertheless be considered even though they are likely downstream from the broader contextual factors? In Chapter 6, we showed that a minority of providers was responsible for the majority of screenings and thus a large proportion of the patient coverage. There remains a possibility that those were the above-average motivated providers (which was not examined in this thesis), thus targeting individual factors such as self-efficacy should not be discounted. However, Chapter 6 also showed that this minority accounts for a similar proportion of all providers in all three countries, meaning the number of involved providers does matter when it comes to increasing absolute patient coverage (which can be influenced through policy or organization-level mechanisms).

The two pathways identified in the SCALA study are likely also to have differing implications for sustainability. In Mexico, the providers kept doing what they were already doing due to the existing policies, they just replaced it with SCALA materials as they were simpler and easier to use. Hence, the sustainability of the SCALA practice is likely to be higher when the intervention fits in well with the existing system. In Colombia, on the other hand, the intervention did not have a precedent in the participating centres, and there was a leadership directive (with providers being obliged to participate) linked to the duration of the project, regardless of the fit with the system. Hence, it remains to be seen whether providers will maintain screening after the end of the SCALA project.

While there is ample literature on the importance of integrating the (health promotion) intervention into the organizational culture in order to ensure sustainability (Amaral et al., 2010; Pantoja et al., 2017; Ronzani et al., 2009), these hypotheses point that broadly applicable guidelines (in our case applicable to all primary care centres) that are implemented as mandatory policies (*Norma Oficial Mexicana NOM-004-SSA3-2012 Del Expediente Clínico*, 2012; *Norma Oficial Mexicana NOM-028-SSA2-2009 Para La Prevención, Tratamiento y Control de Las Adicciones*, 2009 in Mexico) are more likely to lead to intervention sustainability in the longer term.

### **Other drivers of alcohol screening**

Other factors that were not the focus of this thesis should also be mentioned, as they are relevant for understanding the outcome of the intervention. Among the intervention-related factors, the clinical package (as part of the training package) and its availability (such as leaflets and brochures the providers could hand to patients) were essential in an under-resourced middle-income context. If the providers would not have access to those materials, it is much less likely they would start the conversation on alcohol despite all the training efforts. Tailoring the clinical package to the local circumstances at the beginning of the project was also essential and is described elsewhere (O'Donnell et al., 2022).

Secondly, despite the patient-related factors such as cultural normalisation of alcohol being a perceived barrier to alcohol screening among the key stakeholders (Chapter 2) and existing literature also pointing to patient factors as barriers (Derges et al., 2017; Johnson et al., 2011), the remaining papers in this thesis focused on the providers and did not investigate the patient-related factors (apart from some population-level related factors mentioned in Chapter 6). (Currently) unpublished qualitative data collected for process evaluation shows that providers mentioned issues such as patient unwillingness to admit alcohol consumption impeding their ability to provide advice, or that it was predominantly the women attending the centres and sometimes mentioning that the alcohol consumption of their husbands was problematic when asked about alcohol. Future research could give more emphasis on the patient perspective, perhaps in a similar vein to the studies on conversations about alcohol done in the Nordic countries, where patients are surveyed about their experience with talking about alcohol when visiting primary care facilities (Abidi et al., 2020; Lid et al., 2021).

## **THEORETICAL CONSIDERATIONS**

### **The merits and suitability of the used (implementation) frameworks**

There are numerous implementation frameworks (which describe the factors influencing the outcome) that could be used, all of which use similar broader categories, as shown in Nilsen (2015) – e.g. Characteristics of implementation object, characteristics of users, characteristics of the end users, characteristic of the context, characteristics of the implementation strategy. On the other hand, there is little information available on the

merits of one over the another. In our case, the choice of framework used in Chapter 2 of this thesis (Tailored Implementation for Chronic Diseases framework) (Flottorp et al., 2013) was partially pragmatic – the framework has been applied in previous similar projects and aligned with the work done on the rest of this project. However, its key advantage lies in having more elaborated social, political and legal factors compared to the other implementation frameworks (e.g. Damschroder et al., 2009).

The Medical Research Council’s process evaluation framework (Moore et al., 2015) provides a relatively simple but flexible mental model through which the interventions can be evaluated. Its key strength (compared to previous process evaluation frameworks, such as Steckler & Linnan (2002)) is that it “considers intervention processes and mechanisms as part of whole evaluation approach” (Minary et al., 2018), in addition to recognising context as a moderator of not only the intervention but also the outcome (Moore et al., 2015). Overall, the framework can provide an useful lens to evaluate a wide range of interventions and policies, as well as to chart literature in systematic and scoping reviews focusing on potential effective interventions/policies in the real world (e.g. Anderson et al., 2022; Kokole, Anderson, et al., 2021), as it provides structure to consider how was certain study/intervention/policy implemented, in what kind of context has it been implemented (which may elucidate the limitations of current studies focused only on certain populations (e.g. students) or contexts (e.g. high income)), and by which mechanisms is the intervention theorised to work (based on which outcomes are studied).

Another advantage of both the determinant frameworks (as seen above) and the MRC process evaluation guidance is that they imply a systems view of intervention – recognising the influence of multiple interrelating factors working on different levels. Nilsen (2015) also points out that the implementation studies often assess the individual determinant (and assume a linear relationship), and focus less on the possible unpredictable interactions between the implementation determinants. This was partially the case also in this thesis, which focuses on different categories of factors in different chapters. However, Figure 1 presented earlier in this discussion, aims to bring all these results together and showcase how they influence each other. A recently published framework which is steeped more in systems thinking (and was published after the plans for this thesis were already set) is McGill’s process evaluation complex systems framework (McGill et al., 2020), which suggests the aspects of the system to evaluate at the beginning of the intervention, and then track the changes in the system through the process evaluation. The importance of recognising systems views is also demonstrated in the suggestion for revision of the CFIR framework for the low- and middle-income countries, in which authors propose the Characteristics of Systems domain to complement the remaining domains (Means et al., 2020).

Finally, while not a framework per se, consideration should be made about a categorisation used throughout the thesis, namely based on countries’ income (high-income, middle-



income and low-income countries). Much of existing literature usually juxtaposes high-income and low- and middle-income countries” (e.g. “Are results and intervention from the high-income contexts generalizable to low and middle-income contexts?”) – which is also done in some places in this thesis. As a general consideration, the use of term “low and middle-income countries” is to a certain extent insufficient, as we group a variety of countries with very different contexts together based only on variable (income level), in opposition to the rich, high-income countries (which are indeed more homogenised by the Western structures). While this can be seen as the first step – acknowledging that low and middle-income contexts differ from the high-income contexts and would thus have different needs, the next step should be the recognition that low-and middle-income contexts possibly differ among themselves to a larger extent than high-income contexts differ among themselves. Thus, it cannot be generalised that the factors relevant in low-income countries, e.g. in Africa, will also necessarily be relevant in e.g. upper-middle-income Latin American countries studied in this thesis. The dimensions used in the World Value Survey (Haerpfer et al., 2022), specifically the dimensions used in the Inglehart–Welzel cultural map (traditional vs. secular values, and survival vs. self-expression values) could present an alternative and more nuanced approach to understanding and potentially categorising countries.

### **Context as a buzzword**

As briefly discussed in Chapter 6, there are inconsistent definitions of context, ranging from “everything that is not intervention” to “wider social, environmental and political environment”. While the majority of the definitions (Moore et al., 2014; Nilsen & Bernhardsson, 2019; Pfadenhauer et al., 2017; Steckler & Linnan, 2002) include the wider environment, some definitions are broader (e.g. Moore et al., 2014; Nilsen & Bernhardsson, 2019). This can lead to a lack of clarity when searching for the relevant literature – e.g. sometimes individual attitudes are already framed as “contextual factors” (Rogers et al., 2020). “Context”, by its broadening definition, has somehow become the term encompassing everything, but that also contributed to loss of clear meaning. In this thesis, the initially used definition of context was based on MRC’s definition of contextual factors as any non-intervention related factors, however already in the protocol described in Chapter 3, a need for separate section describing socio-political factors was established.

On the one hand, this recognition of the importance of context is good – it reflects the increased awareness that the intervention is not an isolated entity that will work by the same mechanisms everywhere, but acknowledges that the same intervention might function differently in different environments. On the other hand, “context” has become an all-encompassing buzzword, and there is a need for more detailed delineations of context. Other authors have previously recognised the vagueness of using the term “context” (McGill, Petticrew, et al., 2021, McCormack et al., 2002; Minary et al., 2018). In their attempt to come up with a framework suitable for complex systems-oriented process evaluation, McGill, Petticrew, et al. (2021) have recognised that context does not

represent a meaningful category when trying to describe and analyse a changing system, as it overlaps with many other (more nuanced) concepts.

One possible further delineation has been proposed by Nilsen & Bernhardsson (2019) (in which context is defined as everything apart from intervention, individual characteristics of the adopters and the implementation strategies), which mapped the contextual determinants used in the implementation frameworks relevant for healthcare on ten key dimensions acting at different system levels: *patients* at the micro level; *organizational structure and climate, organizational readiness to change, organizational support and organizational structures* at the meso level; and *wider environment* at the macro level. Finally, the dimensions of contextual determinants such as *social relations and support, financial resources, leadership, time availability, feedback and physical environment* are acting at multiple levels (Nilsen & Bernhardsson, 2019). This categorisation is partially overlapping also with researchers that propose less place-dependent definitions of context – Pfadenhauer et al. (2017) speak of the context as embracing not only the setting (as physical, specific location in which the intervention takes place), but also the relational aspects – for example, the roles, interactions and relationships, and May et al. (2016) suggest understanding context as an unfolding process rather than place.

The implementation frameworks are often guiding the researchers and practitioners in selecting the appropriate constructs when developing or implementing interventions, so it is important that they dedicate sufficient attention to the relevant constructs of the wider environment. The commonly used implementation framework (CFIR) (Damschroder et al., 2009) has limited constructs under the Outer setting category (only four), which can lead to the researchers applying that framework to pay less attention to this category. The wider environment-focused context frameworks (such as CICI framework (Pfadenhauer et al., 2017) and guidance on context evaluation in population health research (Craig et al., 2018), suggest several contextual domains to take into consideration, for example geographical, epidemiological, social, cultural, ethical, legal, political, financial and historical context and might be more suitable for detailed examination of the wider environment.

## Results through a complex systems lens

Applying complex systems perspective in health interventions evaluation does not only mean considering the intervention as complex due to a myriad of interacting components and involved stakeholders (Moore et al., 2015), but also seeing intervention as an event in the complex system (Hawe et al., 2009), interacting with the surrounding elements, creating a whole that is larger than the sum of its parts (emergence) and possibly producing non-linear outcomes due to feedback loops, and identifying how the intervention reshapes a system rather than if just works to fix a problem (Rutter et al., 2017). In the last decade, the interest in applying such perspective when developing and evaluating interventions has increased in the (public) health field (Carey et al., 2015), including alcohol (Apostolopoulos et al., 2018), and scaling up health services (Paina

& Peters, 2012), although there are still scarce examples of how this approach can be used in (process) evaluation (McGill et al., 2020). Both complexity science (Siegenfeld & Bar-Yam, 2020) and systems thinking (Meadows, 2008) approaches are considered, although not always distinguished – with the first referring to approaches studying complex systems (often originating in mathematical sciences), and the latter to thinking about real-world phenomena as systems and applying the core systems concepts (such as relationships, boundaries and perspectives) (Gates, 2016).

The MRC framework (used to guide the evaluation design of the research presented in this thesis) considers complexity perspective but does not develop it in depth (Moore et al., 2015); however, its authors consider using a systems lens as valuable to help with the evaluation design (Moore et al., 2019). The application of the complexity perspective in the field of public health has been significantly advancing in recent years (McGill, Er, et al., 2021). The SCALA project was from the outset designed to pay attention to the local context, incentives and institutions, engage key stakeholders throughout the development and implementation of the programme – and those are all considerations based on considerations of the complexity perspective (Paina & Peters, 2012).

While the complex systems perspective has only implicitly been considered in the design of the evaluation done in this thesis, some of the findings can be understood and interpreted also through the complexity lens. McGill et al. (2020) have published a framework for applying a complexity perspective to qualitative process evaluation, with two phases: in the first phase, the researchers produce a description of the system (with its elements, levels and boundaries) and develop hypotheses on how the system may change in response to intervention. In the second phase, the system undergoing change after the implementation is evaluated, using complexity concepts as an aid for analysis (McGill et al., 2020). In the following paragraphs, some of the results presented in this thesis are discussed through the lens of this framework.

In the first phase, the national and to a certain degree municipal system was described through baseline context analysis (as described in Chapter 6), although the focus has been on the elements of the system, rather than the relationships between them. Furthermore, the driver diagram presented in Chapter 3 represents an attempt to see how the intervention components are supposed to influence the outcome, but does not touch upon how the intervention will change the system. In our case, the tailoring of the intervention was done by the local teams in the three countries with some insight into the characteristics of the local system. This knowledge might not have been complete and did not follow any systematic procedure for understanding the system (such as e.g. system or stakeholder mapping), but was much deeper than any of the external researchers could get to assess in a short period of time. Extensive efforts to better understand the local environment have been dedicated in the planning stage of the project, with user panels with patients and providers and field visits to the primary health care centres (O'Donnell et al., 2022). Results from Chapter 4 demonstrated that the training was not

fully optimised before the start of implementation, but continued to be refined after feedback during the implementation period, in line with the dynamic sustainability conceptualization (Chambers et al., 2013).

In the second phase, some of the key findings presented in the thesis can be understood through the lens of complexity/system thinking. A summary of some of the key concepts, as well as how they showed up in SCALA intervention, is presented in Table 1.

**Table 1.** Summary of some common complex-system phenomena and examples from the SCALA project

Complex systems phenomena	Description	Examples showing up in the SCALA project
Path dependence	Non-reversible processes have similar starting points yet lead to different outcomes, even if they follow the same rules, and outcomes are sensitive not only to initial conditions, but also to choices made along the way	Despite the same starting point (recruitment of the same number of PHCCs, and the same training implemented in the three countries), the actual numbers of screening providers and patients screened differed between the three countries due to different country and policy contexts (Chapter 6). Overall, in an environment with broader policy or leadership support, the dose of the intervention (in our case training) needed to be smaller to trigger the change in behaviour (getting the providers to screen), whereas in the environment with less support (in our case Peru), a dose of intervention (training) needed to be bigger to trigger a change in behaviour (which was also happening to a smaller degree - with fewer providers screening).
Feedback	Happens when an output of a process within the system is fed back as an input into the same system; positive feedback increases the rate of change	In Chapter 4, it was shown that screening providers received a higher dose of training. One possible interpretation that goes beyond the linear relationship of “more training – higher likelihood to screen” is that providers who already started screening after the first training were more likely to join the booster sessions, thus increasing their dose received because of their interest after the first training.
Non-linearity	Inputs into the system do not necessarily result in correspondingly sized outcomes	In Chapter 6, we could observe that a minority of the participating providers was responsible for the majority of the screened patients, in approximately the same proportion across the three countries. This implies that the implementation strategies (in combination with the context) did not have the same impact on all participating providers, and produced much larger outcomes in some of them. This is not an uncommon occurrence - Pareto principle as an example of scaling law, where a majority of the consequences comes from minority of the outputs, shows up in many fields (Pareto, 2014).
Unintended consequences	Complex systems are characterised by unanticipated processes and outcomes as a result of non-linear processes and feedback loops	In Chapter 4, we identified some positive unintended consequences of implementing the training, such as providers further training their colleagues, and implementers becoming go-to experts in the field of alcohol.

*Note.* The concepts and definitions adapted from McGill et al., 2020 and Paina & Peters, 2012.

## **METHODOLOGICAL CONSIDERATIONS**

The three main methodological considerations to discuss are the impact of the recruitment on the effects of the intervention, the suitability of the used methodology, and the suitability of the analytical approaches.

### **The impact of the recruitment on the outcomes of the intervention**

The differing recruitment strategies of providers on the PHCC level likely reflected the level of PHCC leadership involvement in the project and were thus indirectly associated with the outcomes of the intervention. As described in Chapter 4, the recruitment of providers differed by country (with Colombia predominantly obligatory, Peru predominantly voluntary, and Mexico a mix of both), and partially depended also on the preference of the recruited centres and their leadership. The approach of the leaders in choosing the recruitment strategy for the providers in their centre likely reflected their own commitment to the project. For example, the obligation to participate (e.g. in Colombia and Mexico) was more likely reflecting the leaders committing to the project by committing at least some of their personnel, whereas allowing volunteering (e.g. in Peru) reflected a more hands-off approach from the leadership side. This is in contrast with a theoretical approach based on the understanding of e.g. self-determination theory (Deci & Ryan, 2012), which would consider volunteering to participate reflecting the intrinsic motivation of the providers and consequentially a better outcome. As argued earlier in the discussion section, however, the broader unsupportive context can outweigh the intrinsic motivation of the participating providers. An alternate approach to achieve greater parity would be to have the same approach in all the recruited centres (either obligatory or voluntary) – however, that might not be feasible in all the countries (in the case of obligatory), or would lead to lower participation (in case of voluntary). Given that it already posed a challenge to recruit a sufficient number of centres in the three countries, the flexibility of recruitment within the centres, in combination with process evaluation assessing the possible impact of the differences, showed to be a feasible solution.

### **The suitability of the used methods**

As described in Chapter 3, both quantitative and qualitative methods were used to evaluate the process. Reflecting back on the chosen methodology after the study implementation, three key considerations can be discussed:

One, the existing plan to use mixed methods facilitated adaptation to the process evaluation protocol based on COVID-19 developments, as the ultimate goal was to capture the information helping to understand the implementation of the intervention rather than the use of a specific methodology. For example, according to the protocol as described in Chapter 3, provider questionnaires were supposed to be administered at three time points to track longer-term changes, with a third measurement done at the end of the implementation period. The collection of questionnaires on a larger scale was hindered by the COVID-19 pandemic, both because many providers dropped out

of the study, and because it was more difficult to go to the centres to deliver and pick up the questionnaires. To deal with this, we adapted the project by focusing more on the qualitative interviews in the second part of the implementation period.

Two, the use of a range of methods enabled better insight and triangulation, but was also resource-intensive on the country level. In such a resource-limited real-world context, it can be a challenge to strike a balance between the amount of data collected and directing resources where they are most beneficial. As an example, when evaluating the implementation of training, both self-report forms (by trainers) and observation forms (by an external observer) were used to assess fidelity and adaptation. While this enabled us to have two sources of data on the same issue and thus strengthened the methodology, it also required much greater involvement on the country level, as there had to be an extra person attending all the training sessions as an observer (which was not always feasible). For future evaluations, it might be less resource intensive and thus more feasible to have only one source of implementation data (e.g. from the present trainers), despite the associated self-reporting limitations. On the other hand, an example of an approach that worked well was a combination of document analysis with logbooks sent on a regular basis and occasional interviews - it proved to be a useful and relatively low-intensity (from a local perspective) approach to capturing factors and events that might turn out to be relevant.

Three, the possibility of bias in questionnaire responses should be examined. Self-report surveys are relatively standard in similar research, (e.g. Haynes et al., 2014; Hickey et al., 2016; McInnes et al., 2020; Nichols et al., 2019), but previous cross-cultural research indicates that the self-report survey items are not always comparable across countries because of culturally conditioned responding styles, for example acquiescence bias (tendency to agree with items regardless of content), or extreme vs. midpoint response style (Hoffmann et al., 2013). In our case, as demonstrated in Chapter 6, there is a rather large cultural similarity between the three countries, so any differences in the provider questionnaire results are likely not biased by differences in response styles. However, there is the likelihood that the responding styles systematically bias the answers of all three countries, especially the acquiescence bias, as it tends to be present in surveying beliefs, attitudes and personally relevant items (Smith, 2016), which was the case in the provider questionnaires used in Chapter 5, and has previously shown up in countries with greater power distances and collectivism (Hoffmann et al., 2013).

Another issue might be that the location where providers completed the questionnaires - their working place - might have influenced their responses. Despite the guarantee of anonymity by the researchers, they might have been afraid that their supervisors might look at their responses - for example, when asked about their work engagement (data not part of this thesis), the average response was 5.7 on a scale from 0 - Never to 6 - Everyday. The implications for this thesis might be related to the organizational context questions,

especially the ones related to work culture or leaders – the responses might also reflect the social desirability on the organizational level.

### **Data analysis in mixed-methods research**

In terms of data analysis and integration of process evaluation with outcome data, the mixed methods approach proved very useful – although a degree of pragmatism in the analysis was necessary. Even in predominantly quantitative studies (as done in Chapters 4 and 5), additional qualitative information was necessary to better understand and interpret the quantitative outcomes.

In Chapter 5, an alternative approach to connecting process evaluation and outcome data would be logistic regression, which would control for all factors at the same time, although despite considering this approach, we ultimately decided to take just simple non-parametric tests to understand the differences between countries without loss of participants. If logistic regression was done, the information from some providers would be lost as not all the trained providers completed the post-training questionnaires - not using logistic regression allowed us to compare the maximal sample sizes at least for some variables (such as demographics and implementation) to gain insight into the whole studied population. The pragmatism mentioned in the beginning was thus reflected also in the choice of analytic approaches.

In Chapter 6, we used qualitative data to help explain the main outcomes in a relatively novel manner, as this study used data from a range of sources to explain the overall country differences in the number of screenings. While there is some mixed methods literature juxtaposing the qualitative interview answers with the outcome (behaviour or behavioural determinants) (Fetters et al., 2013; Guetterman et al., 2015), this study did this on a more extensive level taking into account country and policy factors.

An approach that was not used in this thesis but might be useful in case a higher number of countries would participate, or in case analysis would be made on the level of primary health care centres, would be qualitative comparative analysis or one of its variations, fuzzy set qualitative comparative analysis. Fuzzy set qualitative comparative analysis is a social science methodology that combines case-oriented and variable-oriented quantitative analysis. It is similar to qualitative comparative analysis in terms of identifying configurations of conditions that can explain the selected outcome, however, unlike the qualitative comparative analysis the conditions do not have to belong to dichotomous categories (0 or 1), but can exist on a continuous scale between 0 and 1 (Janse van Rensburg et al., 2021). This would allow us to quantify the qualitative data and have a more robust insight into combinations of conditions leading to the outcome.

Finally, a practical challenge with mixed methods approach and reporting on the results in manuscripts was that there is a lot of information that could be conveyed (both in terms of methodology and results description), but the usual (predominantly health-focused) journals that were considered for the manuscript submission limit the length

of the article (Sidhu et al., 2017). Thus for some papers, long appendices had to be made – and some of the investigated issues even had to be limited in presentation (for example, in Chapter 4, the initial scope of the paper was broader to include also evaluation of the implementation process and barriers and facilitators to implementation). It is not clear how to best approach this issue, as it is understandable the journals want to focus on presenting the key results, but in the context of presenting process evaluation data accompanying the health interventions, more flexibility in paper length would be helpful and would enable to provide more rich information to enhance the understanding of the intervention outcomes.

### **Ethical considerations**

Especially in the field of global health, there is increased recognition of the potential power imbalances in the global north-south collaborations (The Lancet Global Health, 2021), with some criticism being that authors who live and work in high-income countries cannot fully represent those living and working within LMIC systems (Gedela, 2021), and existing imbalances in publication authorships, with country authors being not being first or last (Bhakuni & Abimbola, 2021).

This project was funded by the European Union (H2020 Research and Innovation action), as part of the Global Alliance for Chronic Diseases – GACD call (SCALA, 2021), and within this context, collaborations with Latin American countries are not unusual under the guidelines of science diplomacy (facilitating international scientific cooperation and improving relationships between countries through science), and Open to the World policy (participants from all over the world can participate in most of the calls of Horizon 2020) (Uribe-Mallarino, 2022). A recent analysis of projects involving the largest Latin American countries within this specific Framework programme (Horizon 2020) found that majority of the projects produced no publications at all, but the publications were unevenly distributed by topic and by type of action – and on average, only there were more publications (first) authored by authors of other nationalities participating in the project rather than Latin American authors (Uribe-Mallarino, 2022). For the papers included in this thesis, it could be argued that because of the structure of the project itself (separate working package for process evaluation), there was one person designing and coordinating process evaluation, including input from the three countries, and leading on the process evaluation related papers, to which all the other collaborators were invited to contribute. On the project level, the agreement was that anyone could propose and lead on a paper, thus everyone had the opportunity to come up with their own proposals. In the field of global health, the issue often grappled with is that on some papers, no local partners are included in the first place (The Lancet Global Health, 2021), which was not the case in the SCALA project.

There is also another aspect related more to the field of alcohol research rather than global health in general. In a recent bibliometric analysis, Jaeger et al. (2022) showed that among more than 4500 articles on themes of alcohol consumption, policy response,



governance, alcohol-related harm and determinants – half studied a single country, and more than three-quarters of those were high-income countries (most commonly UK, Australia, and the US). This indicates that there is a lack of alcohol-related research on this topic in the low- and middle-income countries – thus we could argue that any good quality additional literature on in the field of alcohol that covers this area is highly valuable. Nevertheless, in future multi-country collaborations, it is important to be mindful of the potential power differences in terms of resources and knowledge, and set up the project governance and structure in a manner that allows all the participants an equal voice, as well as an equal opportunity for participation in research also to the local researchers (Larkan et al., 2016; Odjidja, 2021).

### **THE STRENGTHS AND LIMITATIONS OF THE THESIS**

The key strength of this thesis is the mixed methods approach, focusing on understanding the factors leading to actual rather than perceived behaviour. Unlike many purely qualitative studies, the research in this thesis does not only focus on the perception of the participants, but uses a range of methods to investigate factors connected to the actual behaviour of the providers (as measured by the use of AUDIT-C as a screening tool), and does so for three different countries, which enables comparison of the different constellation of factors and their contribution to the outcome. Furthermore, the data were collected at multiple points through the implementation period (prolonged by the pause due to the COVID-19 pandemic).

The research in this thesis and the SCALA project as a whole also demonstrated the possibility and challenges of implementation research and evaluation of real-world interventions. One of the key learnings has been that it is possible to track the process even in the absence of being able to control all the possible variables. In our case, the research and implementation teams in countries had a lot of freedom on how to implement the study in order to best fit their local context (within some given parameters, such as quasi-experimental design, equal numbers of recruited centres and the randomisation of the centres within the intervention and control municipalities). Many factors were then differing based on feasibility in each of the countries, but having all the data collection methods put in place enabled us to track the differences; this was also useful with the onset of the COVID-19 pandemic – for example, the existing implementer logbooks were revised to collect information also on COVID-19 in the countries. Thus, this combination of carefully designed mixed-methods process evaluation and measurable behavioural outcomes provided a good opportunity to assess the contextually contingent outcomes (Pawson & Tilley, 2004).

In terms of limitations, despite the focus on actual behaviour, the major part of the research focused on the presence or absence of screening behaviour rather than how much they screened (only in Chapter 5) and how many patients they reached (only in Chapter 6). Given the finding that a small number of providers screened most of the patients, it would be worth further investigating the determinants of the high screening

providers. Furthermore, the research focused on certain selected factors, but there may be other factors on the individual and organizational level that were not investigated, so this is not an exhaustive list of factors that influenced the providers' behaviour. As previously mentioned, some aspects that were not studied were the patient perspective or the cultural norms around alcohol or provider stigma, which show up in qualitative data from those countries (Cavero et al., 2018; Shannon et al., 2021). This thesis also only focuses on screening as the first step in the process – therefore detecting factors related to starting the conversation on alcohol use, and not on the conversation that followed (advice part), for which different factors might be relevant.

Although the qualitative provider data was collected as part of the project process evaluation, it is not included in the papers in this thesis, which means the voice of the providers is somewhat less included (with the provider data being predominantly quantitative - through the key stakeholder survey, baseline questionnaires and post-training questionnaires). Qualitative data presented in this thesis rely to a larger extent on the implementers (through interviews, logbooks and observations) and document analysis. Part of the reason for excluding this from the thesis is that the country partners expressed a wish to lead on the qualitative data papers for their respective countries rather than focus on one big multicountry paper done by a non-local researcher.

Another possible limitation of the papers included in this thesis is that different aspects were analysed as separate papers. While that enabled us to zoom in on a specific issue, there was not always enough space in the paper to present the broader perspective to the readers of the peer-reviewed article (and the broader perspective is now only available in the discussion of the thesis book).

## IMPLICATIONS FOR FUTURE RESEARCH AND PRACTICE

### Implications for future research

While the research done for this thesis can provide us with good insight into what happened in a certain time and place, the findings might not be generalizable. The findings can still be useful for future research and practice, and they can be the first in a long line of investigation on constellations of factors relevant in low and middle-income countries when it comes to training professionals in primary care and closing the alcohol screening-related implementation gap. This research can contribute one perspective to a broader story, through which a better synthesis can be done into a new paradigm of context-mechanism outcome constellations. Thus, similar research to the one conducted in this thesis can be repeated in different settings, especially low- and middle-income, to better understand how factors influence the outcome in a specific environment.

More research is necessary also in general regarding the effectiveness of alcohol screening and different formats of brief advice on patient outcomes in non-high income contexts – as mentioned earlier, “low and middle-income countries” are not a single entity, and despite evidence pointing to the effectiveness of such approach in some countries (Joseph

& Basu, 2017), more research is warranted. Beyond this, other research topics related to factors influencing alcohol screening that could still be tackled in future research are the following:

Examination of the provider and patient perspective – on topics such as alcohol use disorder or addiction-related stigma, or impact of the nature of the relationship between doctor and patient on the conversations about alcohol in primary care. This topic could be explored in a qualitative manner, through individual interviews focusing on the provider and patient perspectives, taking into account the broader cultural context of the countries. An alternative methodology with origin in anthropology, but increasingly used also in public health, is ethnography – combining interviews with participant observations in order to understand the behaviour of participants in a given social situation and their interpretation of it (for example, in Denmark this kind of approach has been used to study cultural practices on handling the patients with unhealthy alcohol use in the emergency department (Sivertsen et al., 2021)).

Characteristics of the highest screening providers: as shown in this thesis, in each country, there was a small number of providers that were responsible for most of the screenings. In order to investigate in which ways they differ from the providers doing less or no screenings, a quantitative comparison could be made on both motivational variables (such as attitudes and self-efficacy), as well as the organizational variables (such as leadership support) based on the questionnaire data, with including country interaction to account for differences in country contexts. This could be complemented with qualitative data from provider interviews, providing their own perspective on the motivations behind their actions.

In-depth examination of the organizational factors and their impact on provider screening: while research in this thesis briefly focused on the organizational level factors through the providers’ perspective (captured in the provider questionnaire), more objective indicators could be sought to explain the number of providers screening and patient coverage on the level on primary health care centre level. An approach such as fuzzy set qualitative comparative analysis could be suitable for this purpose, with an examination of which combination of organizational factors (such as the size of the centre, the proportion of providers participating in the project out of all providers, leadership support, leadership changes, structural changes during the implementation period) led to higher patient coverage in the centre (an example of similar approach done in South Africa (Janse van Rensburg et al., 2021))

The fit of alcohol screening within broader universal primary healthcare and generalizability of this programme to cover also other behavioural risk factors for integrated approach: alcohol consumption is only one of the behaviours contributing to non-communicable diseases, and other factors such as smoking, nutrition and physical activity could also potentially be covered by primary care providers as part of a more integrated approach. Interviews or focus groups could be done with a wide range of

stakeholders on different levels of influence: ministry of health, regional directors, PHCC managers, providers and patients in order to uncover barriers and facilitators to implementing such an approach (Tuangratananon et al., 2021).

Further examination of community support impact on long-term sustainability: A recent scoping review of community-oriented strategies also concluded more empirical justification is necessary for the inclusion of those strategies to facilitate alcohol screening and brief interventions in primary care (Pussig et al., 2021). While in the SCALA study, the community support activities were not implemented to the planned extent due to the COVID-19 pandemic, the partial implementation before and during the pandemic showed promising effects, but also the need for longer time horizons. The impact of various community support activities could thus be examined more in detail in further implementation studies with sufficiently long periods of evaluation.

While not the primary focus of the thesis, research in this thesis also points to the importance of considering interventions as events in complex systems and embracing the complexity concepts and perspectives. In 2020, Mc Gill et al. published a framework for qualitative process evaluation using a complexity perspective (McGill et al., 2020), which could be used for further process evaluations of complex interventions. The MRC framework (Moore et al., 2015) is a broad scaffolding that can be combined with other frameworks, including the previously mentioned contextual frameworks such as CICI framework (Pfadenhauer et al., 2017) and guidance on context evaluation in population health research (Craig et al., 2018). The final implication for future research in the middle-income context is also to find the balance between rigorous methods and data collection feasibility in the resource-limited context.

## Recommendations for practice

The results of this thesis also point to several recommendations relevant for practice. Concerning the future training of health professionals, the findings from Chapter 4 point that when planning training of health professionals, the necessary content and length should be adapted to the country context, which will depend on a range of factors: previous knowledge of providers on the topic (which is also a consequence of existing policies), but also their availability (which is likely to depend on organizational level policies). Booster sessions can be especially important in contexts with lower organization support. Training only is, however, not sufficient to get all the providers to change their behaviour – other support is necessary to increase the number of screening providers. Furthermore, results from Chapter 5 suggest that the training should focus on increasing providers' self-efficacy. This could be achieved through theory-based training that incorporates evidence-based methods shown to increase self-efficacy, such as guided practice, enactive mastery experiences or modelling (Bandura, 1977; Kok et al., 2016) – in our case, the opportunity for practice was key.

Another recommendation concerns the suitability of professional roles implementing screening: the results of this thesis also point out that the broadening of alcohol screening from only doctors to also other roles is feasible – and this is something that can be tapped into to further close the implementation gap (in some cases, other roles can be responsible for screening, and doctor or psychologist for brief intervention), if this fits better with the flow of the patient through the primary care (as suggested in Nadkarni et al., 2022).

The results described in this thesis also point to the importance of considering the wider environment beyond the organization when deciding on the implementation strategies to increase screening rates (or follow any other guidelines) – and even if it's not possible to control the broader context, to assess the external incentives for providers such as for example national or organizational policies. As already suggested elsewhere (McGill, Petticrew, et al., 2021), focusing on the organizational and policy factors may lead to a wider reach and bigger impact than only focusing on changing individual motivational factors, especially when scaling up effective interventions to a broader spectrum of countries. Thus, understanding these factors can aid “vertical scaling” - institutionalisation or integration of the intervention into policy or health system changes (Ramani-Chander et al., 2022). As described in Chapter 4, if the public health goal is to maximise the number of screened patients, directing efforts at introducing such policies might ultimately be more effective than implementation strategies focused only on providers. For this, establishing relationships over the long term is paramount, which is often not accounted for in research projects. In combination with the availability of training and clinical package materials, sensitising organizational leaders to the importance of alcohol screening on the primary care level can also contribute to successful scale-up.

While not directly related to the results of the thesis, it is important also to acknowledge that providing brief interventions in primary care should only be one of the key areas of a broader alcohol policy approach (e.g. currently, brief interventions form only one part of the World Health Organization's SAFER initiative (World Health Organization, 2018b)). However, the screening and brief intervention approach has the advantage of being a health service response rather than a legislative measure, so it might be more feasible to be implemented in the shorter term and can be integrated on municipal or regional level. Current policy analysis points to a lot of work still to be done in the Latin American region in terms of national alcohol policy plans and strategies (Medina-Mora et al., 2021).

Finally, although not the direct focus of the thesis, another implication is taking into consideration the commercial determinants of health in middle-income contexts. As the consumption in high-income countries is decreasing, the alcohol industry is likely to focus on new markets (e.g. middle-income countries) (Walls et al., 2020) and attempt to increase their customer base and influence alcohol policy-making through marketing,

corporate social responsibility activities, industry globalisation and consolidation, and research studies (Conde et al., 2021; Zhang & Monteiro, 2013). Activities and political strategies by the alcohol industry should thus be monitored (McCambridge et al., 2020) to prevent their interference with policy.

## CONCLUSION

This thesis aimed to identify the factors influencing the implementation of alcohol screening by the primary health care providers in Colombia, Mexico and Peru, based on the process evaluation of a quasi-experimental study evaluating the effectiveness of implementation strategies to increase alcohol screening in primary care. Key results show that the factors related to training (dose received), individual (professional role, self-efficacy), organizational level (leadership support), and wider environment (existing practice, alcohol and primary care policy priorities) influenced the screening practice of the professionals. The factors affected the results in the three countries in different ways, and the comparable intervention led to different outcomes in terms of the number of the screening providers and screened patients, depending on the constellation of contextual factors on the country level.

The general wider-environment factors explaining the comparatively overall high number of screenings in Colombia and Mexico were the prioritisation of primary care and consideration of alcohol as a public health issue, meaning that the project fitted well with the policy priorities and had more support from the (regional) health authorities. Additionally, in Mexico, the existing practice (official standards stipulating inclusion of alcohol use in patient's medical file), could explain the comparatively higher number of providers conducting screening, as well as their high self-efficacy at the baseline, which was positively associated with the proportion of screened patients. On the other hand, a combination of political instability in regional authorities, decentralisation of the healthcare system, lack of focus on strengthening primary care, and alcohol being seen as an addiction rather than public health issue could explain the comparatively overall lower number of screenings in Peru, despite the high baseline therapeutic commitment of the Peruvian providers. In all three countries, leadership support was associated with a higher proportion of screened patients in the training arms, but the effect appeared the largest in Colombia, in combination with the community support activities.

In practice, 49% of the trained providers screened any patient for their alcohol consumption, and a small number of the providers screened a large proportion of the patients. These results point to the training being necessary as an implementation strategy to equip the providers with the skills and confidence to initiate conversations on alcohol with patients in their practice, but not sufficient to achieve widespread uptake. In order to scale up alcohol screening and increase patient coverage, however, future implementation strategies should aim beyond solely focusing on the individual, and target community, organizational and policy levels.



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## **ADDENDUM**

**Impact paragraph**

**References**

**Summary**

**Resumen**

**Povzetek**

**Acknowledgements**

**Publication list**

**Curriculum vitae**

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## IMPACT PARAGRAPH

The research in this thesis aimed to understand the factors influencing the implementation of alcohol screening in primary care practice in Colombia, Mexico, and Peru through process evaluation of SCALA project (Scale- up of prevention and management of alcohol use disorders and co-morbid depression). Below, the actual and potential future social and scientific impact is described, as well as dissemination to different target audiences.

### The social impact of the project

In terms of the contribution of this thesis to society, it is not possible to disentangle the research presented in this thesis from the impact of the activities of the SCALA project as a whole. As process evaluation-focused, the research in this thesis was mainly focused on describing what has been implemented and the reasons for the extent of the implementation. Thus, any societal impact cannot be attributed to this research per se, but to the content of the intervention itself, and all the efforts of the local implementers. Hence, in the paragraphs below, the societal impact of the project as a whole is described – both actual (such as the project reach; the number of trained providers and the number of screened patients) and potential future impact (the products of the project are now freely available to be used by any interested party).

In total, just under 500 providers were trained and provided with SCALA clinical package materials to deliver alcohol screening and brief interventions. Besides the 352 providers analysed in Chapter 4, additional 127 providers attended the training after month 5 of the implementation period, most of them after the project restarted during the COVID-19 period. Throughout the whole implementation period, the participating providers screened over 20000 patients in primary health care centres and advised almost 1000 heavy drinkers on how to reduce their alcohol consumption.

In the three participating countries, the local implementers have also used access to providers within the SCALA study to offer help and support during the COVID-19 pandemic. As described in Chapter 6, the three countries suffered a significant impact of the pandemic on their healthcare systems, including primary care systems and the healthcare workforce, and the (participating) providers were often struggling with being overworked, or with anxiety or grief over illness or death of their families or colleagues. The implementers were regularly checking in with the providers and offering help, and in Peru, the local research team developed a mental health and resilience workshop, through which the providers were able to share their difficulties and support each-other.

All the project products are also available on the project website (<https://www.scalaproject.eu/index.php/project-outputs>) and have the potential for further societal impact. The training package with a detailed training plan and associated videos and other materials, as described in Chapter 4, is freely available on the project website and can be used by any interested party. Based on all of the results at the end of the

project, a SCALA Framework was created, providing detailed information and step-by-step guidance to implementing SCALA-like program on the municipal level, aiming at assessing patients' alcohol consumption and advising them on reduction. The barriers questionnaire developed in Chapter 2 has been adapted for inclusion in the framework to aid in identifying relevant factors to consider when tailoring the intervention. All these materials might be interesting for regional health authorities, leaders of primary health care centres or other local stakeholders in Latin America and beyond (all the materials are currently available in English and Spanish).

### **The scientific impact of the findings in this thesis**

In terms of the scientific impact of the research conducted for this thesis, both methodological approaches and the findings could be relevant for other researchers - not only those focused on alcohol screening and brief interventions, but also those in the broader field of implementation science.

Concerning methodology, the protocol presented in Chapter 3, including the developed evaluation instruments, can serve as an example for future multi-country implementation evaluation studies of complex interventions. In further detail, both the baseline context model presented in Chapter 6, as well as the presented approach to collect, analyse and integrate qualitative and quantitative data on the wider environmental contextual factors can be used by the researchers in the further studies evaluating multi-country interventions.

In terms of findings, all of this thesis's conclusions focus on the under-researched setting in the three middle-income countries. Thus it can be argued that even previously investigated topics such as perceived barriers to implementation (Chapter 2), or the impact of motivational and organizational factors (Chapter 5) add new information to the scientific literature by investigating the three Latin American countries in the middle-income setting, situating the results in the broader country context, and demonstrating to what extent are the results between countries comparable. Chapters 4 (the training process evaluation) and Chapter 6 (the evaluation of country and policy context) could be considered the key innovative additions to the scientific literature, especially in the field of implementation science, as they examined the intervention and its influencing factors focusing on novel aspects. Admittedly, this is not the first time the topics such as training implementation and factors related to wider-environment were described, but in the chapter this information was used to explain the results of a real-world intervention and do so in a comparative manner. In Chapter 6, we also call for greater future focus on understanding and clarifying the factors related to the wider environment in developing, implementing and evaluating interventions, which is often missing in intervention and implementation research.

Figure 1. SCALA infographic presenting the key findings



Finally, in line with Horizon 2020 requirements, all the research has been published Open Access, which gives the research broader scientific (and societal) reach. Additionally, the quantitative data used in this thesis (from this thesis and project as a whole) is available on FigShare: [https://figshare.com/projects/Scale-up\\_of\\_Prevention\\_and\\_Management\\_of\\_Alcohol\\_Use\\_Disorders\\_and\\_Comorbid\\_Depression\\_in\\_Latin\\_America\\_SCALA\\_/93902](https://figshare.com/projects/Scale-up_of_Prevention_and_Management_of_Alcohol_Use_Disorders_and_Comorbid_Depression_in_Latin_America_SCALA_/93902).

## **Dissemination**

As mentioned in the previous sections, the project and research outputs are freely available online, at <https://www.scalaproject.eu/index.php/project-outputs>, and all papers have been published Open Access to be freely accessible to the largest audience possible. The research has been presented in academic circles, such as on INEBRIA (International Network for Brief Interventions for Alcohol and Other Drugs), but also to wider audiences, for example, through Pan American Health organization (PAHO) webinar on the SCALA project. On the project level, the process evaluation results have been included in one of the five dissemination videos summarising the key lessons and findings from SCALA, presented at 3rd International Congress – XLVIII Jornadas Nacionales de Socidrogalcohol, and available on Youtube: <https://www.youtube.com/watch?v=auCo9Oj4iwg>. Finally, the key results have also been condensed in an infographic aimed to shortly introduce the project and its findings to a wide range of stakeholders (Figure 1).

## REFERENCES

- Abidi, L., Nilsen, P., Karlsson, N., Skagerström, J., & O'Donnell, A. (2020). Conversations about alcohol in healthcare - Cross-sectional surveys in the Netherlands and Sweden. *BMC Public Health*, 20(1), 1–11. <https://doi.org/10.1186/S12889-020-8367-8/TABLES/4>
- Abidi, L., Oenema, A., Nilsen, P., Anderson, P., & van de Mheen, D. (2016). Strategies to Overcome Barriers to Implementation of Alcohol Screening and Brief Intervention in General Practice: a Delphi Study Among Healthcare Professionals and Addiction Prevention Experts. *Prevention Science*, 17(6), 689–699. <https://doi.org/10.1007/s11121-016-0653-4>
- Acquavita, S. P., Richardson, G. B., Smith, R., Van Loon, R. A., Brehm, B., Kim, K., & Diers, T. (2021). Outcomes of an interprofessional SBIRT training program: Knowledge attainment and perceived competence for practice. *Substance Abuse*, 1–9. <https://doi.org/10.1080/08897077.2021.1900982>
- Ajzen, I. (2012). Martin Fishbein's legacy: The reasoned action approach. *Annals of the American Academy of Political and Social Science*, 640(1), 11–27. <https://doi.org/10.1177/0002716211423363>
- Amaral, M. B., Ronzani, T. M., & Souza-Formigoni, M. L. O. (2010). Process evaluation of the implementation of a screening and brief intervention program for alcohol risk in primary health care: An experience in Brazil. *Drug and Alcohol Review*, 29(2), 162–168. <https://doi.org/10.1111/j.1465-3362.2009.00120.x>
- Anderson, P. (2004). Attitudes and Managing Alcohol Problems in General Practice: an Interaction Analysis Based on Findings From a WHO Collaborative Study. *Alcohol and Alcoholism*, 39(4), 351–356. <https://doi.org/10.1093/alcalc/agh072>
- Anderson, P., Bendtsen, P., Spak, F., Reynolds, J., Drummond, C., Segura, L., Keurhorst, M. N., Palacio-Vieira, J., Wojnar, M., Parkinson, K., Colom, J., Kloda, K., Deluca, P., Baena, B., Newbury-Birch, D., Wallace, P., Heinen, M., Wolstenholme, A., van Steenkiste, B., ... Gual, T. (2016). Improving the delivery of brief interventions for heavy drinking in primary health care: outcome results of the Optimizing Delivery of Health Care Intervention (ODHIN) five-country cluster randomized factorial trial. *Addiction*, 111(11), 1935–1945. <https://doi.org/10.1111/add.13476>
- Anderson, P., Chisholm, D., & Fuhr, D. C. (2009). Effectiveness and cost-effectiveness of policies and programmes to reduce the harm caused by alcohol. *The Lancet*, 373(9682), 2234–2246. [https://doi.org/10.1016/S0140-6736\(09\)60744-3](https://doi.org/10.1016/S0140-6736(09)60744-3)
- Anderson, P., & Clement, S. (1987). The AAPPQ revisited: the measurement of general practitioners' attitudes to alcohol problems. *British Journal of Addiction*, 82(7), 753–759. <https://doi.org/10.1111/j.1360-0443.1987.tb01542.x>
- Anderson, P., Jané-Llopis, E., Hasan, O. S. M., & Rehm, J. (2018). Changing collective social norms in favour of reduced harmful use of alcohol: a review of reviews. *Alcohol and Alcoholism*, 53(3), 326–332.
- Anderson, P., Kaner, E., Keurhorst, M., Bendtsen, P., Steenkiste, B., Reynolds, J., Segura, L., Wojnar, M., Kloda, K., Parkinson, K., Drummond, C., Okulicz-Kozaryn, K., Mierzecki, A., Laurant, M., Newbury-Birch, D., & Gual, A. (2017). Attitudes and Learning through Practice Are Key to Delivering Brief Interventions for Heavy Drinking in Primary Health Care: Analyses from the ODHIN Five Country Cluster Randomized Factorial Trial. *International Journal of Environmental Research and Public Health*, 14(2), 121. <https://doi.org/10.3390/ijerph14020121>
- Anderson, P., Kaner, E., Wutzke, S., Wensing, M., Grol, R., Heather, N., & Saunders, J. (2003). Attitudes and management of alcohol problems in general practice: Descriptive analysis based on findings of a world health organization international collaborative survey. *Alcohol and Alcoholism*, 38(6), 597–601. <https://doi.org/10.1093/alcalc/agg119>

- Anderson, P., Kokole, D., Llopis, E. J., Burton, R., & Lachenmeier, D. W. (2022). Lower Strength Alcohol Products - A Realist Review-Based Road Map for European Policy Making. *Nutrients* 2022, Vol. 14, Page 3779, 14(18), 3779. <https://doi.org/10.3390/NU14183779>
- Anderson, P., Manthey, J., Jané-Llopis, E., Natera Rey, G., Bustamante, I. V., Piazza, M., Aguilar, P. S. M., Mejía-Trujillo, J., Pérez-Gómez, A., Rowlands, G., Lopez-Pelayo, H., Mercken, L., Kokole, D., O'Donnell, A., Solovei, A., Kaner, E., Schulte, B., de Vries, H., Schmidt, C., ... Rehm, J. (2021). Impact of Training and Municipal Support on Primary Health Care-Based Measurement of Alcohol Consumption in Three Latin American Countries: 5-Month Outcome Results of the Quasi-experimental Randomized SCALA Trial. *Journal of General Internal Medicine*, 1–9. <https://doi.org/10.1007/s11606-020-06503-9>
- Anderson, P., Wojnar, M., Jakubczyk, A., Gual, A., Segura, L., Sovinova, H., Csemy, L., Kaner, E., Newbury-Birch, D., Fornasin, A., Struzzo, P., Ronda, G., van Steenkiste, B., Keurhorst, M., Laurant, M., Ribeiro, C., do Rosário, F., Alves, I., Scafato, E., ... Kolsek, M. (2014). Managing alcohol problems in general practice in Europe: Results from the European ODHIN survey of general practitioners. *Alcohol and Alcoholism*, 49(5), 531–539. <https://doi.org/10.1093/alcalc/agu043>
- Apostolopoulos, Y., Lemke, M. K., Barry, A. E., & Lich, K. H. (2018). Moving alcohol prevention research forward-Part I: introducing a complex systems paradigm. *Addiction*, 113(2), 353–362. <https://doi.org/10.1111/add.13955>
- Atun, R., De Andrade, L. O. M., Almeida, G., Cotlear, D., Dmytraczenko, T., Frenz, P., Garcia, P., Gómez-Dantés, O., Knaul, F. M., Muntaner, C., De Paula, J. B., Rígoli, F., Serrate, P. C. F., & Wagstaff, A. (2015). Health-system reform and universal health coverage in Latin America. *The Lancet*, 385(9974), 1230–1247. [https://doi.org/10.1016/S0140-6736\(14\)61646-9](https://doi.org/10.1016/S0140-6736(14)61646-9)
- Babor, T. F., Higgins-Biddle, J. C., Saunders, J. B., & Monteiro, M. G. (2001). *AUDIT - The alcohol use disorders identification test*. World Health Organization. <https://doi.org/10.1177/0269881110393051>
- Bagnardi, V., Rota, M., Botteri, E., Tramacere, I., Islami, F., Fedirko, V., Scotti, L., Jenab, M., Turati, F., Pasquali, E., Pelucchi, C., Galeone, C., Bellocco, R., Negri, E., Corrao, G., Boffetta, P., & La Vecchia, C. (2015). Alcohol consumption and site-specific cancer risk: A comprehensive dose-response meta-analysis. *British Journal of Cancer*, 112(3), 580–593. <https://doi.org/10.1038/bjc.2014.579>
- Bandura, A. (1977). Self-efficacy; Toward a Unifying Theory of Behavioural Change. *Psychological Review*, 84(2), 191–215.
- Bandura, A. (2004). Health promotion by social cognitive means. *Health Education and Behavior*, 31(2), 143–164. <https://doi.org/10.1177/1090198104263660>
- Barker, P. M., Reid, A., & Schall, M. W. (2016). A framework for scaling up health interventions: lessons from large-scale improvement initiatives in Africa. *Implementation Science*, 11(1). <https://doi.org/10.1186/S13012-016-0374-X>
- Bauer, M. S., Damschroder, L., Hagedorn, H., Smith, J., & Kilbourne, A. M. (2015). An introduction to implementation science for the non-specialist. *BMC Psychology*, 3(1). <https://doi.org/10.1186/S40359-015-0089-9>
- Bellos, S., Skapinakis, P., Rai, D., Zitko, P., Araya, R., Lewis, G., Lionis, C., & Mavreas, V. (2016). Longitudinal association between different levels of alcohol consumption and a new onset of depression and generalized anxiety disorder: results from an international study in primary care. *Psychiatry Research*, 243, 30–34.

- Bendtsen, P., Anderson, P., Wojnar, M., Newbury-Birch, D., Müssener, U., Colom, J., Karlsson, N., Brzózka, K., Spak, F., Deluca, P., Drummond, C., Kaner, E., Kłoda, K., Mierzecki, A., Okulicz-Kozaryn, K., Parkinson, K., Reynolds, J., Ronda, G., Segura, L., ... Gual, A. (2015). Professional's attitudes do not influence screening and brief interventions rates for hazardous and harmful drinkers: Results from ODHIN study. *Alcohol and Alcoholism*, 50(4), 430–437. <https://doi.org/10.1093/alcalc/agv020>
- Bergström, A., Skeen, S., Duc, D. M., Blandon, E. Z., Estabrooks, C., Gustavsson, P., Hoa, D. T. P., Källestål, C., Målvqvist, M., Nga, N. T., Persson, L. Å., Pervin, J., Peterson, S., Rahman, A., Selling, K., Squires, J. E., Tomlinson, M., Waiswa, P., & Wallin, L. (2015). Health system context and implementation of evidence-based practices-development and validation of the Context Assessment for Community Health (COACH) tool for low- and middle-income settings. *Implementation Science*, 10(1). <https://doi.org/10.1186/s13012-015-0305-2>
- Bertelsmann Stiftung. (2019). *Sustainable Governance Indicators*. <https://www.sgi-network.org/2019/>
- Beyer, F. R., Campbell, F., Bertholet, N., Daepfen, J. B., Saunders, J. B., Pienaar, E. D., Muirhead, C. R., & Kaner, E. F. S. (2019). The Cochrane 2018 Review on Brief Interventions in Primary Care for Hazardous and Harmful Alcohol Consumption: A Distillation for Clinicians and Policy Makers. *Alcohol and Alcoholism*, 1–11. <https://doi.org/10.1093/alcalc/agz035>
- Bhakuni, H., & Abimbola, S. (2021). Epistemic injustice in academic global health. *The Lancet Global Health*, 9(10), e1465–e1470. [https://doi.org/10.1016/S2214-109X\(21\)00301-6](https://doi.org/10.1016/S2214-109X(21)00301-6)
- Boden, J. M., & Fergusson, D. M. (2011). Alcohol and depression. *Addiction*, 106(5), 906–914.
- Booth, A., Moore, G., Flemming, K., Garside, R., Rollins, N., Tunçalp, Ö., & Noyes, J. (2019). Taking account of context in systematic reviews and guidelines considering a complexity perspective. *BMJ Global Health*, 4(Suppl 1), e000840. <https://doi.org/10.1136/BMJGH-2018-000840>
- Brownson, R. C., Colditz, G. A., & Proctor, E. K. (2012). Dissemination and Implementation Research in Health: Translating Science to Practice. In *Dissemination and Implementation Research in Health: Translating Science to Practice*. Oxford University Press. <https://doi.org/10.1093/ACPROF:OSO/9780199751877.001.0001>
- Bulthuis, S. E., Kok, M. C., Raven, J., & Dieleman, M. A. (2020). Factors influencing the scale-up of public health interventions in low- and middle-income countries: A qualitative systematic literature review. *Health Policy and Planning*, 35(2), 219–234. <https://doi.org/10.1093/heapol/czz140>
- Bumbarger, B., & Perkins, D. (2008). After randomised trials: issues related to dissemination of evidence-based interventions. In *Journal of Children's Services* (Vol. 3, Issue 2, pp. 55–64). <https://doi.org/10.1108/17466660200800012>
- Carey, G., Malbon, E., Carey, N., Joyce, A., Crammond, B., & Carey, A. (2015). Systems science and systems thinking for public health: A systematic review of the field. *BMJ Open*, 5(12), 1–9. <https://doi.org/10.1136/bmjopen-2015-009002>
- Cavero, V., Diez-Canseco, F., Toyama, M., Flórez Salcedo, G., Ipince, A., Araya, R., & Miranda, J. J. (2018). Provision of mental health care within primary care in Peru: A qualitative study exploring the perspectives of psychologists, primary health care providers, and patients. *Wellcome Open Research*, 3(9), 1–18. <https://doi.org/10.12688/wellcomeopenres.13746.1>
- Chambers, D. A., Glasgow, R. E., & Stange, K. C. (2013). The dynamic sustainability framework: Addressing the paradox of sustainment amid ongoing change. *Implementation Science*, 8(1), 1–11. <https://doi.org/10.1186/1748-5908-8-117>
- Chisholm, D., Moro, D., Bertram, M., Pretorius, C., Gmel, G., Shield, K., & Rehm, J. (2018). Are the “best buys” for alcohol control still valid? An update on the comparative cost-effectiveness of alcohol control strategies at the global level. *Journal of Studies on Alcohol and Drugs*, 79(4), 514–522. <https://doi.org/10.15288/JSAD.2018.79.514>

- CnEps. (n.d.). *La sorveglianza passi – consumo di alcohol*. Centro nazionale di Epidemiologia sorveglianza e Promozione della salute. [www.epicentro.iss.it/passi/dati/alcol.asp](http://www.epicentro.iss.it/passi/dati/alcol.asp)
- Colom, J., Scafato, E., Segura, L., Gandin, C., & Struzzo, P. (2014). Brief interventions implementation on alcohol from the European health systems perspective. *Frontiers in Psychiatry, 5*(161). <https://doi.org/10.3389/fpsy.2014.00161>
- Conde, K., Peltzer, R. I., Pantani, D., Pinsky, I., & Cremonte, M. (2021). Alcohol industry, corporate social responsibility and country features in Latin America. *Drug and Alcohol Review, 40*(3), 423–430. <https://doi.org/10.1111/dar.13208>
- Craig, P., Di Ruggiero, E., Frohlich, K. L., Mykhalovskiy, E., White, M., Campbell, R., Cummins, S., Edwards, N., Hunt, K., Kee, F., Loppie, C., Moore, L., Ogilvie, D., Petticrew, M., Poland, B., Ridde, V., Shoveller, J., Viehbeck, S., & Wight, D. (2018). *Taking account of context in population health intervention research: guidance for producers, users and funders of research*. <https://doi.org/10.3310/CIHR-NIHR-01>
- Craig, P., Dieppe, P., Macintyre, S., Mitchie, S., Nazareth, I., & Petticrew, M. (2008). Developing and evaluating complex interventions: The new Medical Research Council guidance. In *BMJ* (Vol. 337, Issue 7676, pp. 979–983). BMJ Publishing Group. <https://doi.org/10.1136/bmj.a1655>
- Creswell, J., & Creswell, J. D. (2018). *Research Design. Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed.). Sage.
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and Conducting Mixed Methods Research. 2nd Edition*. Sage Publications.
- Daivadanam, M., Ingram, M., Annerstedt, K. S., Parker, G., Bobrow, K., Dolovich, L., Gould, G., Riddell, M., Vedanthan, R., Webster, J., Absetz, P., Alvesson, H. M., Androutsos, O., Chavannes, N., Cortez, B., Devarasetty, P., Fottrell, E., Gonzalez-Salazar, F., Goudge, J., ... Zhang, P. (2019). The role of context in implementation research for non-communicable diseases: Answering the 'how-to' dilemma. *PLoS ONE, 14*(4), 1–22. <https://doi.org/10.1371/journal.pone.0214454>
- Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. *Implementation Science, 4*(1), 1–15. <https://doi.org/10.1186/1748-5908-4-50>
- Deci, E. L., & Ryan, R. M. (2012). Self-determination theory. *Handbook of Theories of Social Psychology: Volume 1*, 416–437. <https://doi.org/10.4135/9781446249215.N21>
- Derges, J., Kidger, J., Fox, F., Campbell, R., Kaner, E., & Hickman, M. (2017). Alcohol screening and brief interventions for adults and young people in health and community-based settings: A qualitative systematic literature review. *BMC Public Health, 17*(1), 1–12. <https://doi.org/10.1186/s12889-017-4476-4>
- Edwards, G. (2010). The trouble with drink: why ideas matter. *Addiction, 105*(5), 797–804. <https://doi.org/10.1111/J.1360-0443.2009.02773.X>
- Esponda, G. M., Hartman, S., Qureshi, O., Sadler, E., Cohen, A., & Kakuma, R. (2019). Barriers and facilitators of mental health programmes in primary care in low-income and middle-income countries. *The Lancet Psychiatry, 6*(19), 1–15. [https://doi.org/10.1016/s2215-0366\(19\)30125-7](https://doi.org/10.1016/s2215-0366(19)30125-7)
- Faregh, N., Lencucha, R., Ventevogel, P., Dubale, B. W., & Kirmayer, L. J. (2019). Considering culture, context and community in mhGAP implementation and training: Challenges and recommendations from the field. In *International Journal of Mental Health Systems* (Vol. 13, Issue 1, pp. 1–13). BioMed Central Ltd. <https://doi.org/10.1186/s13033-019-0312-9>
- Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving Integration in Mixed Methods Designs—Principles and Practices. *Health Services Research, 48*(6pt2), 2134–2156. <https://doi.org/10.1111/1475-6773.12117>



- Fishbein, M., & Ajzen, I. (2011). *Predicting and changing behavior: The reasoned action approach*. Taylor & Francis.
- Fleuren, M., Wiefferink, K., & Paulussen, T. (2004). Determinants of innovation within health care organizations Literature review and Delphi study. *International Journal for Quality in Health Care*, 16(2), 107–123. <https://doi.org/10.1093/INTQHC/MZH030>
- Flottorp, S. A., Oxman, A. D., Krause, J., Musila, N. R., Wensing, M., Godycki-Cwirko, M., Baker, R., & Eccles, M. P. (2013). A checklist for identifying determinants of practice: A systematic review and synthesis of frameworks and taxonomies of factors that prevent or enable improvements in healthcare professional practice. *Implementation Science*, 8(1). <https://doi.org/10.1186/1748-5908-8-35>
- Furtado, E. F., Corradi-Webster, C. M., & Laprega, M. R. (2008). Implementing brief interventions for alcohol problems in the public health system in the region of Ribeirão Preto, Brazil: evaluation of the PAI-PAD training model. *Nordic Studies on Alcohol and Drugs*, 25(6), 6–6. <https://doi.org/10.1177/145507250802500606>
- Gakidou, E., Afshin, A., Abajobir, A. A., Abate, K. H., Abbafati, C., Abbas, K. M., Abd-Allah, F., Abdulle, A. M., Abera, S. F., Aboyans, V., & others. (2017). Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet*, 390, 1345–1422.
- Gates, E. F. (2016). Making sense of the emerging conversation in evaluation about systems thinking and complexity science. *Evaluation and Program Planning*, 59, 62–73. <https://doi.org/10.1016/J.EVALPROGPLAN.2016.08.004>
- GBD 2016 Alcohol Collaborators. (2018). Alcohol use and burden for 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet*, 392, 1015–1035. [https://doi.org/10.1016/S0140-6736\(18\)31310-2](https://doi.org/10.1016/S0140-6736(18)31310-2)
- Gedela, K. (2021). Are current systems of global health academia fit for purpose? *The Lancet Global Health*, 9(12), e1656. [https://doi.org/10.1016/S2214-109X\(21\)00453-8](https://doi.org/10.1016/S2214-109X(21)00453-8)
- Gelberg, L., Natera Rey, G., Andersen, R. M., Arroyo, M., Bojorquez-Chapela, I., Rico, M. W., Vahidi, M., Yacenda-Murphy, J., Arangua, L., & Serota, M. (2017). Prevalence of Substance Use Among Patients of Community Health Centers in East Los Angeles and Tijuana. *Substance Use and Misuse*, 52(3), 359–372. <https://doi.org/10.1080/10826084.2016.1227848>
- Ghosh, A., Singh, P., Das, N., Pandit, P. M., Das, S., & Sarkar, S. (2022). Efficacy of brief intervention for harmful and hazardous alcohol use: a systematic review and meta-analysis of studies from low middle-income countries. *Addiction*, 117(3), 545–558. <https://doi.org/10.1111/ADD.15613>
- Glasgow, R. E., Vogt, T. M., & Boles, S. M. (1999). Evaluating the public health impact of health promotion interventions: The RE-AIM framework. *American Journal of Public Health*, 89(9), 1322–1327. <https://doi.org/10.2105/AJPH.89.9.1322>
- Gorman, D. M., & Cartwright, A. K. J. (1991). Implications of using the composite and short versions of the Alcohol and Alcohol Problems Perception Questionnaire (AAPPQ). *British Journal of Addiction*, 86(3), 327–334. <https://doi.org/10.1111/j.1360-0443.1991.tb01786.x>
- Grant, A., Bugge, C., & Wells, M. (2020). Designing process evaluations using case study to explore the context of complex-interventions evaluated in trials. *Trials*, 21(1), 1–10. <https://doi.org/10.1186/S13063-020-04880-4/TABLES/2>
- Grant, B. F., Goldstein, R. B., Saha, T. D., Patricia Chou, S., Jung, J., Zhang, H., Pickering, R. P., June Ruan, W., Smith, S. M., Huang, B., & Hasin, D. S. (2015). Epidemiology of DSM-5 alcohol use disorder results from the national epidemiologic survey on alcohol and related conditions III. *JAMA Psychiatry*, 72(8), 757–766. <https://doi.org/10.1001/jamapsychiatry.2015.0584>

- Green, J. A. (2020). Too many zeros and / or highly skewed? A tutorial on modelling health behaviour as count data with Poisson and negative binomial regression. *OSF Preprints*, 2(July), 1–25.
- Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a Conceptual Framework for Mixed-Method Evaluation Designs. *Educational Evaluation and Policy Analysis*, 11(3), 255–274. <https://doi.org/10.3102/01623737011003255>
- Greenhalgh, T., & Papoutsis, C. (2019). Spreading and scaling up innovation and improvement. *BMJ*, 365. <https://doi.org/10.1136/BMJ.L2068>
- Guetterman, T. C., Feters, M. D., & Creswell, J. W. (2015). Integrating Quantitative and Qualitative Results in Health Science Mixed Methods Research Through Joint Displays. *Annals of Family Medicine*, 13(6), 554–561. <https://doi.org/10.1370/AFM.1865>
- Haerpf, C., Inglehart, R., Moreno, A., Welzel, C., Kizilova, K., Diez-Medrano, J., Lagos, M., Norris, P., Ponarin, E., & Puranen, B. (2022). *World Values Survey: Round Seven - Country-Pooled Datafile Version 4.0*. JD Systems Institute & WVSA Secretariat. <https://doi.org/doi:10.14281/18241.18>
- Hawe, P., Shiell, A., & Riley, T. (2009). Theorising interventions as events in systems. *American Journal of Community Psychology*, 43(3–4), 267–276. <https://doi.org/10.1007/s10464-009-9229-9>
- Haynes, A., Brennan, S., Carter, S., O'Connor, D., Schneider, C. H., Turner, T., & Gallego, G. (2014). Protocol for the process evaluation of a complex intervention designed to increase the use of research in health policy and program organisations (the SPIRIT study). *Implementation Science*, 9(1), 113. <https://doi.org/10.1186/s13012-014-0113-0>
- Heather, N. (2006). *WHO Collaborative project on identification and management of alcohol-related problems in primary health care. Report on Phase IV - Development of Country-Wide Strategies for Implementing Early identification and Brief Intervention in Primary Health Care*. <https://apps.who.int/iris/handle/10665/43519>
- Heather, N. (2011). Developing, evaluating and implementing alcohol brief interventions in Europe. *Drug and Alcohol Review*, 30(2), 138–147. <https://doi.org/10.1111/J.1465-3362.2010.00267.X>
- Heather, N. (2014). The efficacy-effectiveness distinction in trials of alcohol brief intervention. *Addiction Science and Clinical Practice*, 9(1), 1–9. <https://doi.org/10.1186/1940-0640-9-13/FIGURES/1>
- Helble, M., & Sato, A. (n.d.). Booms and booze: on the relationship between macroeconomic conditions and alcohol consumption. *Health Policy*.
- Hickey, G., McGilloway, S., Furlong, M., Leckey, Y., Bywater, T., & Donnelly, M. (2016). Understanding the implementation and effectiveness of a group-based early parenting intervention: A process evaluation protocol. *BMC Health Services Research*, 16(1), 1–14. <https://doi.org/10.1186/s12913-016-1737-3>
- Hoffman, K. A., Beltrán, J., Ponce, J., García-Fernández, L., Calderón, M., Muench, J., Benites, C., Soto, L., McCarty, D., & Fiestas, F. (2016). Barreras para implementar el despistaje, intervenciones breves y referencia al tratamiento por problemas de consumo de alcohol y otras drogas en hospitales que atienden personas que viven con el VIH/sida en el Perú. *Revista Peruana de Medicina Experimental y Salud Pública*, 33(3), 432–437. <https://doi.org/10.17843/rpmesp.2016.333.2293>
- Hoffmann, S., Mai, R., & Cristescu, A. (2013). Do culture-dependent response styles distort substantial relationships? *International Business Review*, 22(5), 814–827. <https://doi.org/10.1016/J.IBUSREV.2013.01.008>
- Hulscher, M., & Wensing, M. (2020). Process Evaluation of Implementation Strategies. *Improving Patient Care*, 369–387. <https://doi.org/10.1002/9781119488620.CH22>

- Hutchings, D., Cassidy, P., Dallolio, E., Pearson, P., Heather, N., & Kaner, E. (2006). Implementation screening and brief alcohol interventions in primary care: views from both sides of the consultation. *Primary Health Care Research and Development*, 7, 221–229.
- IBM Corp. (2017). *IBM SPSS Statistics for Windows, Version 25.0*. IBM Corp.
- Imtiazi, S., Shield, K. D., Roerecke, M., Samokhvalov, A. V., Lönnroth, K., & Rehm, J. (2017). Alcohol consumption as a risk factor for tuberculosis: meta-analyses and burden of disease. *European Respiratory Journal*, 50(1), 1700216.
- Inglehart, R., & Welzel, C. (2005). *Modernization, Cultural Change, and Democracy*. Cambridge University Press.
- Institute for Health Metrics and Evaluation. (n.d.). *GBD Results tool*. Retrieved 11 June 2021, from <http://ghdx.healthdata.org/gbd-results-tool>
- Institute for Health Metrics and Evaluation. (2019a). *Colombia country profile*. <http://www.healthdata.org/colombia>
- Institute for Health Metrics and Evaluation. (2019b). *Mexico Country Profile*. <http://www.healthdata.org/mexico>
- Institute for Health Metrics and Evaluation. (2019c). *Peru Country Profile*. <http://www.healthdata.org/peru>
- Institute for Healthcare Improvement. (n.d.). *Driver diagram*. Retrieved 17 April 2020, from <http://www.ihl.org/resources/Pages/Tools/Driver-Diagram.aspx>
- Isela, K., Martínez, M., Yolanda, A., Trejo, P., Echeverría, L., Vicente, S., & Medina-Mora, M. E. (2016). Barreras en la transferencia de la tecnología : Un estudio cualitativo de las intervenciones breves y los centros de atención a las adicciones. *Salud Mental*, 39(5), 257–265. <https://doi.org/10.17711/SM.0185-3325.2016.030>
- Jaeger, L., Devi, T., Barbazza, E., Neufeld, M., Franz, C., Marten, R., & Tello, J. E. (2022). Describing and mapping scientific articles on alcohol globally for the period 2010–2021: a bibliometric analysis. *BMJ Open*, 12(9), e063365. <https://doi.org/10.1136/BMJOPEN-2022-063365>
- Jane-Llopis, E., Anderson, P., Piazza, M., O'Donnell, A., Gual, A., Schulte, B., Gomez, A. P., Vries, H. de, Rey, G. N., Kokole, D., Bustamente, I., Braddick, F., Trujillo, J. M., Solovei, A., Leon, A. P. de, Kaner, E., Matrai, S., Manthey, J., Mercken, L., ... Rehm, J. (2020). Implementing primary health care-based measurement, advice and treatment for heavy drinking and comorbid depression at the municipal level in three Latin American countries: final protocol for a quasi-experimental study (SCALA study). *BMJ Open*, 10(e038226), 1–14. <https://doi.org/10.21203/rs.2.22734/v1>
- Janse van Rensburg, A., Kathree, T., Breuer, E., Selohilwe, O., Mntambo, N., Petrus, R., Bhana, A., Lund, C., Fairall, L., & Petersen, I. (2021). Fuzzy-set qualitative comparative analysis of implementation outcomes in an integrated mental healthcare trial in South Africa. *Global Health Action*, 14(1). <https://doi.org/10.1080/16549716.2021.1940761>
- Johnson, M., Jackson, R., Guillaume, L., Meier, P., & Goyder, E. (2011). Barriers and facilitators to implementing screening and brief intervention for alcohol misuse: A systematic review of qualitative evidence. *Journal of Public Health*, 33(3), 412–421. <https://doi.org/10.1093/pubmed/fdq095>
- Joseph, J., & Basu, D. (2017). Efficacy of Brief Interventions in Reducing Hazardous or Harmful Alcohol Use in Middle-Income Countries : Systematic Review of Randomized Controlled Trials. *Alcohol & Alcoholism*, 52(1), 56–64. <https://doi.org/10.1093/alcalc/agw054>
- Kaner, E. F. S., Beyer, F. R., Muirhead, C., Campbell, F., Pienaar, E. D., Bertholet, N., Daepfen, J. B., Saunders, J. B., & Burnand, B. (2018). Effectiveness of brief alcohol interventions in primary care populations. *Cochrane Database of Systematic Reviews*, 2018(2), 1–200. <https://doi.org/10.1002/14651858.CD004148.pub4>

- Keurhorst, M., Anderson, P., Heinen, M., Bendtsen, P., Baena, B., Brzózka, K., Colom, J., Deluca, P., Drummond, C., Kaner, E., Kłoda, K., Mierzecki, A., Newbury-Birch, D., Okulicz-Kozaryn, K., Palacio-Vieira, J., Parkinson, K., Reynolds, J., Ronda, G., Segura, L., ... Wensing, M. (2016). Impact of primary healthcare providers' initial role security and therapeutic commitment on implementing brief interventions in managing risky alcohol consumption: A cluster randomised factorial trial. *Implementation Science*, *11*(1), 96. <https://doi.org/10.1186/s13012-016-0468-5>
- Keurhorst, M., Heinen, M., Colom, J., Linderoth, C., Müssener, U., Okulicz-Kozaryn, K., Palacio-Vieira, J., Segura, L., Silfversparre, F., Słodownik, L., Sorribes, E., Laurant, M., & Wensing, M. (2016). Strategies in primary healthcare to implement early identification of risky alcohol consumption: Why do they work or not? A qualitative evaluation of the ODHIN study. *BMC Family Practice*, *17*(1), 1–16. <https://doi.org/10.1186/s12875-016-0461-8>
- Keurhorst, M., van de Glind, I., Bitarello do Amaral-Sabadini, M., Anderson, P., Kaner, E., Newbury-Birch, D., Braspenning, J., Wensing, M., Heinen, M., & Laurant, M. (2015). Implementation strategies to enhance management of heavy alcohol consumption in primary health care: a meta-analysis. *Addiction*, *110*(12), 1877–1900. <https://doi.org/10.1111/ADD.13088>
- Kok, G., Gottlieb, N. H., Peters, G. J. Y., Mullen, P. D., Parcel, G. S., Ruiter, R. A. C., Fernández, M. E., Markham, C., & Bartholomew, L. K. (2016). A taxonomy of behaviour change methods: an Intervention Mapping approach. *Health Psychology Review*, *10*(3), 297–312. <https://doi.org/10.1080/17437199.2015.1077155>
- Kokole, D. (2021). *Process outcomes of scale up - Full report of the process evaluation of the SCALA project*. <https://cordis.europa.eu/project/id/778048/results>
- Kokole, D., Anderson, P., & Jané-Llopis, E. (2021). Nature and Potential Impact of Alcohol Health Warning Labels: A Scoping Review. *Nutrients* *2021*, Vol. 13, Page 3065, *13*(9), 3065. <https://doi.org/10.3390/NU13093065>
- Kokole, D., Jané-Llopis, E., Mercken, L., Piazza, M., Bustamante, I., Natera Rey, G., Medina, P., Pérez-Gómez, A., Mejía-Trujillo, J., O'Donnell, A., Kaner, E., Gual, A., Schmidt, C. S., Schulte, B., Candel, M. J. J. M., de Vries, H., & Anderson, P. (2021). Factors associated with primary health care providers' alcohol screening behavior in Colombia, Mexico and Peru. *Substance Abuse*. <https://doi.org/10.1080/08897077.2021.1903658>
- Kokole, D., Jané-Llopis, E., Natera, G., Bautista, N., Medina, P., Mejía-Trujillo, J., Mora, K., Restrepo, N., Bustamante, I., Piazza, M., O'Donnell, A., Solovei, A., Mercken, L., Schmidt, C., Lopez-Pelayo, H., Matrai, S., Braddick, F., Gual, T., Rehm, J., ... de Vries, H. (2022). Training primary health care providers in Colombia, Mexico and Peru to increase alcohol screening: mixed methods process evaluation of implementation strategy. *Implementation Research and Practice*, *3*.
- Kokole, D., Mercken, L., Jané-Llopis, E., Natera Rey, G., Arroyo, M., Medina, P., Pérez-Gómez, A., Mejía-Trujillo, J., Piazza, M., Bustamante, I. V., O'Donnell, A., Kaner, E., Gual, A., Lopez-Pelayo, H., Schulte, B., Manthey, J., Rehm, J., Anderson, P., & de Vries, H. (2021). Perceived appropriateness of alcohol screening and brief advice programmes in Colombia, Mexico and Peru and barriers to their implementation in primary health care—a cross-sectional survey. *Primary Health Care Research and Development*, *22*(e4). <https://doi.org/10.1017/S1463423620000675>
- Kruk, M. E., Porignon, D., Rockers, P. C., & Van Lerberghe, W. (2010). The contribution of primary care to health and health systems in low- and middle-income countries: A critical review of major primary care initiatives. *Social Science and Medicine*, *70*(6), 904–911. <https://doi.org/10.1016/j.socscimed.2009.11.025>

- Larkan, F., Uduma, O., Lawal, S. A., & van Bavel, B. (2016). Developing a framework for successful research partnerships in global health. *Globalization and Health*, 12(1), 1–9. <https://doi.org/10.1186/S12992-016-0152-1/TABLES/1>
- Lau, R., Stevenson, F., Ong, B. N., Dziedzic, K., Treweek, S., Eldridge, S., Everitt, H., Kennedy, A., Qureshi, N., Rogers, A., Peacock, R., & Murray, E. (2016). Achieving change in primary care-causes of the evidence to practice gap: Systematic reviews of reviews. *Implementation Science*, 11(1). <https://doi.org/10.1186/s13012-016-0396-4>
- Lewis, C. C., Boyd, M. R., Walsh-Bailey, C., Lyon, A. R., Beidas, R., Mittman, B., Aarons, G. A., Weiner, B. J., & Chambers, D. A. (2020). A systematic review of empirical studies examining mechanisms of implementation in health. *Implementation Science*, 15(1), 1–25. <https://doi.org/10.1186/s13012-020-00983-3>
- Lid, T. G., Karlsson, N., Thomas, K., Skagerström, J., O'Donnell, A., Abidi, L., & Nilsen, P. (2021). Addressing Patients' Alcohol Consumption—A Population-Based Survey of Patient Experiences. *International Journal of Public Health*, 66, 94. <https://doi.org/10.3389/IJPH.2021.1604298/BIBTEX>
- Liu, H., Mohammed, A., Shanthosh, J., News, M., Laba, T. L., Hackett, M. L., Peiris, D., & Jan, S. (2019). Process evaluations of primary care interventions addressing chronic disease: a systematic review. *BMJ Open*, 9(8), e025127. <https://doi.org/10.1136/BMJOPEN-2018-025127>
- Lock, C. A. (2004). Alcohol and brief intervention in primary health care: what do patients think? *Primary Health Care Research and Development*, 5(2), 162–178. <https://doi.org/10.1191/1463423604pc194oa>
- Louie, E., Barrett, E. L., Baillie, A., Haber, P., & Morley, K. C. (2021). A systematic review of evidence-based practice implementation in drug and alcohol settings: applying the consolidated framework for implementation research framework. *Implementation Science : IS*, 16(1), 22. <https://doi.org/10.1186/S13012-021-01090-7/TABLES/4>
- Manthey, J., Shield, K. D., Rylett, M., Hasan, O. S. M., Probst, C., & Rehm, J. (2019). Global alcohol exposure between 1990 and 2017 and forecasts until 2030: a modelling study. *The Lancet*, 393(10190), 2493–2502. [https://doi.org/10.1016/S0140-6736\(18\)32744-2](https://doi.org/10.1016/S0140-6736(18)32744-2)
- Manthey, J., Solovei, A., Anderson, P., Carr, S., & Rehm, J. (2021). Can alcohol consumption in Germany be reduced by alcohol screening, brief intervention and referral to treatment in primary health care? Results of a simulation study. *PLOS ONE*, 16(8), e0255843. <https://doi.org/10.1371/JOURNAL.PONE.0255843>
- May, C. R., Johnson, M., & Finch, T. (2016). Implementation, context and complexity. *Implementation Science*, 11(1), 1–12. <https://doi.org/10.1186/S13012-016-0506-3/FIGURES/1>
- McCambridge, J. (2021). Reimagining brief interventions for alcohol: towards a paradigm fit for the twenty first century?: INEBRIA Nick Heather Lecture 2019: This lecture celebrates the work of Nick Heather in leading thinking in respect of both brief interventions and wider alcohol sciences. *Addiction Science and Clinical Practice*, 16(1), 1–10. <https://doi.org/10.1186/S13722-021-00250-W/METRICS>
- McCambridge, J., Kypri, K., Sheldon, T. A., Madden, M., & Babor, T. F. (2020). Advancing public health policy making through research on the political strategies of alcohol industry actors. *Journal of Public Health*, 42(2), 262–269. <https://doi.org/10.1093/PUBMED/FDZ031>
- McCormack, B., Kitson, A., Harvey, G., Rycroft-Malone, J., Titchen, A., & Seers, K. (2002). Getting evidence into practice: the meaning of 'context'. *Journal of Advanced Nursing*, 38(1), 94–104. <https://doi.org/10.1046/J.1365-2648.2002.02150.X>
- McGill, E., Er, V., Penney, T., Egan, M., White, M., Meier, P., Whitehead, M., Lock, K., Anderson de Cuevas, R., Smith, R., Savona, N., Rutter, H., Marks, D., de Vocht, F., Cummins, S., Popay, J., & Petticrew, M. (2021). Evaluation of public health interventions from a complex systems perspective: A research methods review. *Social Science & Medicine*, 272, 113697. <https://doi.org/10.1016/J.SOCSCIMED.2021.113697>

- McGill, E., Marks, D., Er, V., Penney, T., Petticrew, M., & Egan, M. (2020). Qualitative process evaluation from a complex systems perspective: A systematic review and framework for public health evaluators. *PLOS Medicine*, *17*(11), e1003368. <https://doi.org/10.1371/journal.pmed.1003368>
- McGill, E., Petticrew, M., Marks, D., McGrath, M., Rinaldi, C., & Egan, M. (2021). Applying a complex systems perspective to alcohol consumption and the prevention of alcohol-related harms in the 21st century: a scoping review. *Addiction*, add.15341. <https://doi.org/10.1111/add.15341>
- McInnes, E., Dale, S., Craig, L., Phillips, R., Fasugba, O., Schadewaldt, V., Cheung, N. W., Cadilhac, D. A., Grimshaw, J. M., Levi, C., Considine, J., McElduff, P., Gerraty, R., Fitzgerald, M., Ward, J., D'Este, C., & Middleton, S. (2020). Process evaluation of an implementation trial to improve the triage, treatment and transfer of stroke patients in emergency departments (T3 trial): a qualitative study. *Implementation Science*, *15*(1), 99. <https://doi.org/10.1186/s13012-020-01057-0>
- Meadows, D. (1999). *Leverage Points: Places to Intervene in a System*. <https://donellameadows.org/archives/leverage-points-places-to-intervene-in-a-system/>
- Meadows, D. (2008). *Thinking in Systems: A Primer*. Chelsea Green Publishing.
- Means, A. R., Kemp, C. G., Gwayi-Chore, M. C., Gimbel, S., Soi, C., Sherr, K., Wagenaar, B. H., Wasserheit, J. N., & Weiner, B. J. (2020). Evaluating and optimizing the consolidated framework for implementation research (CFIR) for use in low- And middle-income countries: A systematic review. *Implementation Science*, *15*(1), 1–19. <https://doi.org/10.1186/S13012-020-0977-0/TABLES/3>
- Medina-Mora, M. E., Monteiro, M., Rafful, C., & Samano, I. (2021). Comprehensive analysis of alcohol policies in the Latin America and the Caribbean. *Drug and Alcohol Review*, *40*(3), 385–401. <https://doi.org/10.1111/DAR.13227>
- Minary, L., Alla, F., Cambon, L., Kivits, J., & Potvin, L. (2018). Addressing complexity in population health intervention research: the context/intervention interface. *Journal of Epidemiology and Community Health*, *72*(4), 319–323. <https://doi.org/10.1136/jech-2017-209921>
- Ministerio de Salud Peru. (2018). *Plan nacional de fortalecimiento de servicios de salud mental comunitaria 2018-2021*. <http://bvs.minsa.gob.pe/local/MINSA/4422.pdf>
- Ministerio de Salud y Protección Social. (2013). *Guía de práctica clínica para la detección temprana, diagnóstico y tratamiento de la fase aguda de intoxicación de pacientes con abuso o dependencia del alcohol - 2013 Guía No. 23*. [https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/INEC/IETS/GPC\\_Completa\\_OH.pdf](https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/INEC/IETS/GPC_Completa_OH.pdf)
- Moore, G., Audrey, S., Barker, M., Bond, L., Bonell, C., Hardeman, W., Moore, L., O’Cathain, A., Tinati, T., Wight, D., & Baird, J. (2014). *Process evaluation of complex interventions UK Medical Research Council (MRC) guidance*. <https://mrc.ukri.org/documents/pdf/mrc-phsrn-process-evaluation-guidance-final/>
- Moore, G., Audrey, S., Barker, M., Bond, L., Bonell, C., Hardeman, W., Moore, L., O’Cathain, A., Tinati, T., Wight, D., & Baird, J. (2015). Process evaluation of complex interventions: Medical Research Council guidance. *BMJ (Online)*, *350*(h1258), 1–7. <https://doi.org/10.1136/bmj.h1258>
- Moore, G., & Evans, R. (2017). What theory, for whom and in which context? Reflections on the application of theory in the development and evaluation of complex population health interventions. *SSM - Population Health*, *3*, 132–135. <https://doi.org/10.1016/j.ssmph.2016.12.005>

- Moore, G., Evans, R. E., Hawkins, J., Littlecott, H., Melendez-Torres, G. J., Bonell, C., & Murphy, S. (2019). From complex social interventions to interventions in complex social systems: Future directions and unresolved questions for intervention development and evaluation. *Evaluation*, 25(1), 23–45. <https://doi.org/10.1177/1356389018803219>
- Moretti-Pires, R. O., & Corradi-Webster, C. M. (2011). Implementação de intervenções breves para uso problemático de álcool na atenção primária, em um contexto amazônico. *Revista Latino-Americana de Enfermagem*, 19(spe), 813–820. <https://doi.org/10.1590/S0104-11692011000700020>
- Murray, C. J. L., Aravkin, A. Y., Zheng, P., Abbafati, C., Abbas, K. M., Abbasi-Kangevari, M., Abd-Allah, F., Abdelalim, A., Abdollahi, M., Abdollahpour, I., Abegaz, K. H., Abolhassani, H., Aboyans, V., Abreu, L. G., Abrigo, M. R. M., Abualhasan, A., Abu-Raddad, L. J., Abushouk, A. I., Adabi, M., ... Factors, G. B. D. 2019 R. (2020). Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *LANCET*, 396(10258), 1223–1249.
- Nadkarni, A., Bhatia, U., Bedendo, A., de Paula, T. C. S., de Andrade Tostes, J. G., Segura-Garcia, L., Tiburcio, M., & Andréasson, S. (2022). Brief interventions for alcohol use disorders in low- and middle-income countries: barriers and potential solutions. *International Journal of Mental Health Systems* 2022 16:1, 16(1), 1–14. <https://doi.org/10.1186/S13033-022-00548-5>
- National Institutes of Health. (2018). *Qualitative methods in implementation science*. <https://cancercontrol.cancer.gov/sites/default/files/2020-09/nci-dccps-implementationsscience-whitepaper.pdf>
- Nichols, V. P., Abraham, C., Eldabe, S., Sandhu, H. K., Underwood, M., & Seers, K. (2019). Process evaluation protocol for the I-WOTCH study: An opioid tapering support programme for people with chronic non-malignant pain. *BMJ Open*, 9(10), 1–7. <https://doi.org/10.1136/bmjopen-2019-028998>
- Nilsen, P. (2015). Making sense of implementation theories, models and frameworks. *Implementation Science*, 10(53). <https://doi.org/10.1186/s13012-015-0242-0>
- Nilsen, P., Aalto, M., Bendtsen, P., & Seppä, K. (2006). Effectiveness of strategies to implement brief alcohol intervention in primary healthcare: A systematic review. *Scandinavian Journal of Primary Health Care*, 24(1), 5–15. <https://doi.org/10.1080/02813430500475282>
- Nilsen, P., & Bernhardtsson, S. (2019). Context matters in implementation science: A scoping review of determinant frameworks that describe contextual determinants for implementation outcomes. *BMC Health Services Research*, 19(1), 1–21. <https://doi.org/10.1186/s12913-019-4015-3>
- Norma Oficial Mexicana NOM-004-SSA3-2012 del expediente clínico. (2012). <https://www.cndh.org.mx/DocTR/2016/JUR/A70/01/JUR-20170331-NOR26.pdf>
- Norma Oficial Mexicana NOM-028-SSA2-2009 para la prevención, tratamiento y control de las adicciones. (2009). [http://www.conadic.salud.gob.mx/pdfs/norma\\_oficial\\_nom.pdf](http://www.conadic.salud.gob.mx/pdfs/norma_oficial_nom.pdf)
- O’Cathain, A., Murphy, E., & Nicholl, J. (2010). Three techniques for integrating data in mixed methods studies. *BMJ (Online)*, 341(7783), 1147–1150. <https://doi.org/10.1136/bmj.c4587>
- O’Cathain, A., Thomas, K. J., Drabble, S. J., Rudolph, A., & Hewison, J. (2013). What can qualitative research do for randomised controlled trials? A systematic mapping review. *BMJ Open*, 3(6). <https://doi.org/10.1136/bmjopen-2013-002889>
- Odjidja, E. N. (2021). What is wrong with global health? So-called glorified data collectors in low-income regions. *The Lancet Global Health*, 9(10), e1365. [https://doi.org/10.1016/S2214-109X\(21\)00371-5](https://doi.org/10.1016/S2214-109X(21)00371-5)
- O’Donnell, A., Anderson, P., Newbury-Birch, D., Schulte, B., Schmidt, C., Reimer, J., & Kaner, E. (2014). The impact of brief alcohol interventions in primary healthcare: A systematic review of reviews. *Alcohol and Alcoholism*, 49(1), 66–78. <https://doi.org/10.1093/alcalk/agt170>

- O'Donnell, A., Anderson, P., Schmidt, C., Braddick, F., Lopez-Pelayo, H., Mejía-Trujillo, J., Natera, G., Arroyo, M., Bautista, N., Piazza, M., Bustamante, I. V., Kokole, D., Jackson, K., Jane-Llopis, E., Gual, A., & Schulte, B. (2022). Tailoring an evidence-based clinical intervention and training package for the treatment and prevention of comorbid heavy drinking and depression in middle-income country settings: the development of the SCALA toolkit in Latin America. *Global Health Action*, 15(1). [https://doi.org/10.1080/16549716.2022.2080344/SUPPL\\_FILE/ZGHA\\_A\\_2080344\\_SM0688.DOCX](https://doi.org/10.1080/16549716.2022.2080344/SUPPL_FILE/ZGHA_A_2080344_SM0688.DOCX)
- O'Donnell, A., Schulte, B., Manthey, J., Schmidt, C. S., Piazza, M., Chavez, I. B., Natera, G., Aguilar, N. B., Hernández, G. Y. S., Mejía-Trujillo, J., Pérez-Gómez, A., Gual, A., de Vries, H., Solovei, A., Kokole, D., Kaner, E., Kilian, C., Rehm, J., Anderson, P., & Jané-Llopis, E. (2021). Primary care-based screening and management of depression amongst heavy drinking patients: Interim secondary outcomes of a three-country quasi-experimental study in Latin America. *PLoS One*, 16(8). <https://doi.org/10.1371/JOURNAL.PONE.0255594>
- O'Donnell, A., Wallace, P., & Kaner, E. (2014). From efficacy to effectiveness and beyond: What next for brief interventions in primary care? *Frontiers in Psychiatry*, 5(113), 1–8. <https://doi.org/10.3389/fpsy.2014.00113>
- OECD. (2015). *Tackling Harmful Alcohol Use: Economics and Public Health Policy*. OECD publishing. <https://doi.org/10.1787/9789264181069-en>
- OECD Better Life initiative. (2011). *Compendium of OECD well-being indicators*. <https://www.oecd.org/general/compendiumofoccdwell-beingindicators.htm>
- Okaru, A. O., & Lachenmeier, D. W. (2021). Margin of exposure analyses and overall toxic effects of alcohol with special consideration of carcinogenicity. *Nutrients*, 13(1).
- Ozer, E. M., Adams, S. H., Gardner, L. R., Mailloux, D. E., Wibbelsman, C. J., & Irwin, C. E. (2004). Provider self-efficacy and the screening of adolescents for risky health behaviors. *Journal of Adolescent Health*, 35(2), 101–107. <https://doi.org/10.1016/j.jadohealth.2003.09.016>
- Paina, L., & Peters, D. H. (2012). Understanding pathways for scaling up health services through the lens of complex adaptive systems. *Health Policy and Planning*, 27(5), 365–373. <https://doi.org/10.1093/heapol/czr054>
- Palinkas, L. A., & Rhoades Cooper, B. (2018). Mixed methods evaluation in dissemination and implementation science. In R. C. Brownson, G. A. Colditz, & E. K. Proctor (Eds.), *Dissemination and Implementation Research in Health: Translating Science to Practice*. (2nd edition). Oxford University Press.
- Pantoja, T., Opiyo, N., Lewin, S., Paulsen, E., Ciapponi, A., Wiysonge, C. S., Herrera, C. A., Rada, G., Peñaloza, B., Dudley, L., Gagnon, M. P., Marti, S. G., & Oxman, A. D. (2017). Implementation strategies for health systems in low-income countries: An overview of systematic reviews. In *Cochrane Database of Systematic Reviews* (Vol. 2017, Issue 9). John Wiley and Sons Ltd. <https://doi.org/10.1002/14651858.CD011086.pub2>
- Pareto, V. (2014). *Manual of Political Economy: A Critical and Variorum Edition*. Oxford University Press.
- Pawson, R. (2004). Simple Principles for The Evaluation of Complex Programmes. *An Evidence-Based Approach to Public Health and Tackling Health Inequalities: Practical Steps and Methodological Challenges*, 1–36. <https://doi.org/10.1136/bmjopen-2012-001533>
- Pawson, R., & Tilley, N. (2004). *Realist Evaluation*. [http://www.communitymatters.com.au/RE\\_chapter.pdf](http://www.communitymatters.com.au/RE_chapter.pdf)
- Peters, D. H., Adam, T., Alonge, O., Agyepong, I. A., & Tran, N. (2013). Implementation research: what it is and how to do it. *BMJ*, 347(8), 731–736. <https://doi.org/10.1136/BMJ.F6753>
- Petticrew, M., Knai, C., Thomas, J., Rehfues, E. A., Noyes, J., Gerhardus, A., Grimshaw, J. M., Rutter, H., & McGill, E. (2019). Implications of a complexity perspective for systematic reviews and guideline development in health decision making. *BMJ Global Health*, 4(Suppl 1), e000899. <https://doi.org/10.1136/bmjgh-2018-000899>



- Pfadenhauer, L. M., Gerhardus, A., Mozygemba, K., Lysdahl, K. B., Booth, A., Hofmann, B., Wahlster, P., Polus, S., Burns, J., Brereton, L., & Rehfuss, E. (2017). Making sense of complexity in context and implementation: The Context and Implementation of Complex Interventions (CICI) framework. *Implementation Science*, *12*(1), 1–17. <https://doi.org/10.1186/S13012-017-0552-5/TABLES/5>
- Piat, M., Wainwright, M., Sofouli, E., Vachon, B., Deslauriers, T., Préfontaine, C., & Frati, F. (2021). Factors influencing the implementation of mental health recovery into services: a systematic mixed studies review. *Systematic Reviews* *2021* *10*:1, *10*(1), 1–21. <https://doi.org/10.1186/S13643-021-01646-0>
- Pinnock, H., Barwick, M., Carpenter, C. R., Eldridge, S., Grandes, G., Griffiths, C. J., Rycroft-Malone, J., Meissner, P., Murray, E., Patel, A., Sheikh, A., & Taylor, S. J. C. (2017). Standards for Reporting Implementation Studies (StaRI) Statement. *BMJ (Online)*, *356*(March), 1–9. <https://doi.org/10.1136/bmj.i6795>
- Platt, L., Melendez-Torres, G. J., O'Donnell, A., Bradley, J., Newbury-Birch, D., Kaner, E., & Ashton, C. (2016). How effective are brief interventions in reducing alcohol consumption: do the setting, practitioner group and content matter? Findings from a systematic review and meta-regression analysis. *BMJ Open*, *6*(8), e011473. <https://doi.org/10.1136/bmjopen-2016-011473>
- Popova, S., Lange, S., Shield, K., Mihic, A., Chudley, A. E., Mukherjee, R. A. S., Bekmuradov, D., & Rehm, J. (2016). Comorbidity of fetal alcohol spectrum disorder: a systematic review and meta-analysis. *The Lancet*, *387*(10022), 978–987.
- Preusse, M., Neuner, F., & Ertl, V. (2020). Effectiveness of Psychosocial Interventions Targeting Hazardous and Harmful Alcohol Use and Alcohol-Related Symptoms in Low- and Middle-Income Countries: A Systematic Review. *Frontiers in Psychiatry*, *11*, 1. <https://doi.org/10.3389/fpsy.2020.00768>
- Proctor, E., Powell, B., & McMillen, J. C. (2013). Implementation strategies: Recommendations for specifying and reporting. *Implementation Science*, *8*(1), 1–11. <https://doi.org/10.1186/1748-5908-8-139/TABLES/2>
- Proctor, E., Silmere, H., Raghavan, R., Hovmand, P., Aarons, G., Bunger, A., Griffey, R., & Hensley, M. (2011). Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda. *Administration and Policy in Mental Health*, *38*, 65–76. <https://doi.org/10.1007/s10488-010-0319-7>
- Pussig, B., Vandelanotte, S., Matheï, C., Pas, L., Aertgeerts, B., & Vermandere, M. (2021). Mapping key components of community-oriented strategies to facilitate alcohol-related early identification and brief intervention in general practice: a scoping review. *Family Practice*. <https://doi.org/10.1093/FAMPRA/CMAB078>
- Pyne HH, Claeson M, & Correia M. (2002). Gender dimensions of alcohol consumption and alcohol-related problems in Latin America and the Caribbean. World Bank Discussion Paper No. 433. In *Pan Am J Public Health* (Vol. 12, Issue 1). <https://scielosp.org/pdf/rpsp/v12n1/10984.pdf>
- Rahm, A. K., Boggs, J. M., Martin, C., Price, D. W., Beck, A., Backer, T. E., & Dearing, J. W. (2015). Facilitators and barriers to implementing screening, brief intervention, and referral to treatment (SBIRT) in primary care in integrated health care settings. *Substance Abuse*, *36*(3), 281–288. <https://doi.org/10.1080/08897077.2014.951140>

- Ramani-Chander, A., Joshi, R., Van Olmen, J., Wouters, E., Delobelle, P., Vedanthan, R., Miranda, J. J., Oldenburg, B., Sherwood, S., Rawal, L. B., Mash, R. J., Irazola, V. E., Martens, M., Lazo-Porras, M., Liu, H., Agarwal, G., Waqa, G., Marcolino, M. S., Esandi, M. E., ... Thrift, A. G. (2022). Applying systems thinking to identify enablers and challenges to scale-up interventions for hypertension and diabetes in low-income and middle-income countries: protocol for a longitudinal mixed-methods study. *BMJ Open*, *12*(4), e053122. <https://doi.org/10.1136/BMJOPEN-2021-053122>
- Rapport, F., Clay-Williams, R., Churruca, K., Shih, P., Hogden, A., & Braithwaite, J. (2018). The struggle of translating science into action: Foundational concepts of implementation science. *Journal of Evaluation in Clinical Practice*, *24*(1), 117–126. <https://doi.org/10.1111/jep.12741>
- Rehm, J., Gmel Sr, G. E., Gmel, G., Hasan, O. S. M., Imtiaz, S., Popova, S., Probst, C., Roerecke, M., Room, R., Samokhvalov, A. v, Shield, K., & Shuper, P. (2017). The relationship between different dimensions of alcohol use and the burden of disease—an update. *Addiction*, *112*(6), 968–1001.
- Rehm, J., & Imtiaz, S. (2016). A narrative review of alcohol consumption as a risk factor for global burden of disease. *Substance Abuse: Treatment, Prevention, and Policy*, *11*(1), 1–12. <https://doi.org/10.1186/s13011-016-0081-2>
- Rehm, J., & Roerecke, M. (2017). Cardiovascular effects of alcohol consumption. *Trends in Cardiovascular Medicine*, *27*(8), 534–538. <https://doi.org/10.1016/j.tcm.2017.06.002>
- Rehm, J., Rovira, P., Llamosas-Falcón, L., & Shield, K. D. (2021). Dose–Response Relationships between Levels of Alcohol Use and Risks of Mortality or Disease, for All People, by Age, Sex, and Specific Risk Factors. *Nutrients* 2021, Vol. 13, Page 2652, *13*(8), 2652. <https://doi.org/10.3390/NU13082652>
- Rehm, J., Taylor, B., Mohapatra, S., Irving, H., Baliunas, D., Patra, J., & Roerecke, M. (2010). Alcohol as a risk factor for liver cirrhosis: A systematic review and meta-analysis. *Drug and Alcohol Review*, *29*(4), 437–445. <https://doi.org/10.1111/j.1465-3362.2009.00153.x>
- Roerecke, M., & Rehm, J. (2014). Alcohol consumption, drinking patterns, and ischemic heart disease: A narrative review of meta-analyses and a systematic review and meta-analysis of the impact of heavy drinking occasions on risk for moderate drinkers. *BMC Medicine*, *12*(1), 1–11. <https://doi.org/10.1186/s12916-014-0182-6>
- Rogers, E. (2003). *Diffusion of Innovations, 5th Edition*. Free Press.
- Rogers, L., De Brún, A., & McAuliffe, E. (2020). Defining and assessing context in healthcare implementation studies: A systematic review. *BMC Health Services Research*, *20*(1), 1–24. <https://doi.org/10.1186/S12913-020-05212-7/FIGURES/4>
- Ronzani, T. M., Fuentes-Mejía, C., Mota, D. C. B., Gomide, H. P., Ferreira, M. L., & Cruvinel, E. (2019). Brief interventions for substance abuse in Latin America: A systematic review. *Psicologia Em Estudo*, *24*(e44393), 1–16. <https://doi.org/10.4025/PSICOLESTUD.V24I0.44393>
- Ronzani, T. M., Mota, D. C., & de Souza, I. C. (2009). Alcohol prevention within primary care in municipalities in the state of Minas Gerais, Southeastern Brazil. *Revista de Saude Publica*, *43 Suppl 1*, 51–61. <https://doi.org/10.1590/S0034-89102009000800009>
- Rosário, F., Santos, M. I., Angus, K., Pas, L., Ribeiro, C., & Fitzgerald, N. (2021). Factors influencing the implementation of screening and brief interventions for alcohol use in primary care practices: a systematic review using the COM-B system and Theoretical Domains Framework. *Implementation Science*, *16*(1), 1–25. <https://doi.org/10.1186/s13012-020-01073-0>
- Rowe, A. K., Rowe, S. Y., Peters, D. H., Holloway, K. A., Chalker, J., & Ross-Degnan, D. (2018). Effectiveness of strategies to improve health-care provider practices in low-income and middle-income countries: a systematic review. *The Lancet Global Health*, *6*(11), e1163–e1175. [https://doi.org/10.1016/S2214-109X\(18\)30398-X](https://doi.org/10.1016/S2214-109X(18)30398-X)

- Rutter, H., Savona, N., Glonti, K., Bibby, J., Cummins, S., Finegood, D. T., Greaves, F., Harper, L., Hawe, P., Moore, L., Petticrew, M., Rehfuss, E., Shiell, A., Thomas, J., & White, M. (2017). The need for a complex systems model of evidence for public health. *The Lancet*, 390(10112), 2602–2604. [https://doi.org/10.1016/S0140-6736\(17\)31267-9](https://doi.org/10.1016/S0140-6736(17)31267-9)
- Rychetnik, L., Frommer, M., Hawe, P., & Shiell, A. (2002). Criteria for evaluating evidence on public health interventions. *Journal of Epidemiology and Community Health*, 56, 119–127.
- Rycroft-Malone, J. (2004). The PARIHS Framework—A Framework for Guiding the Implementation of Evidence-based Practice. *Journal of Nursing Care Quality*, 19(4). [https://journals.lww.com/jncqjournal/fulltext/2004/10000/the\\_parihs\\_framework\\_a\\_framework\\_for\\_guiding\\_the.2.aspx](https://journals.lww.com/jncqjournal/fulltext/2004/10000/the_parihs_framework_a_framework_for_guiding_the.2.aspx)
- Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., & Jinks, C. (2018). Saturation in qualitative research: exploring its conceptualization and operationalization. *Quality and Quantity*, 52(4), 1893–1907. <https://doi.org/10.1007/s11135-017-0574-8>
- SCALA. (2021). *SCALA project outputs*. <https://www.scalaproject.eu/index.php/project-outputs>
- Schmidt, C. S., McGovern, R., Schulte, B., O'Donnell, A. J., Lehmann, K., Kuhn, S., Schäfer, I., Newbury-Birch, D., Anderson, P., Kaner, E., & Reimer, J. (2015). Brief alcohol interventions in social service and criminal justice settings: A critical commentary. *British Journal of Social Work*, 45(3), 1039–1049. <https://doi.org/10.1093/bjsw/bcu100>
- Scientific Software Development GmbH. (2019). *Atlas.ti 8.4 for Windows*.
- Shannon, C. L., Bartels, S. M., Cepeda, M., Castro, S., Cubillos, L., Suárez-Obando, F., Williams, M. J., Gómez Restrepo, C., Uribe, M., Marsch, L., & Torrey, W. C. (2021). Perspectives on the Implementation of Screening and Treatment for Depression and Alcohol Use Disorder in Primary Care in Colombia. *Community Mental Health Journal*, 57(8), 1579–1587. <https://doi.org/10.1007/s10597-021-00781-1>
- Shield, K., Manthey, J., Rylett, M., Probst, C., Wettlaufer, A., Parry, C. D. H., & Rehm, J. (2020). National, regional, and global burdens of disease from 2000 to 2016 attributable to alcohol use: a comparative risk assessment study. *The Lancet Public Health*, 5(1), e51–e61. [https://doi.org/10.1016/S2468-2667\(19\)30231-2](https://doi.org/10.1016/S2468-2667(19)30231-2)
- Sidhu, K., Jones, R., & Stevenson, F. (2017). Publishing qualitative research in medical journals. *British Journal of General Practice*, 67(658), 229–230. <https://doi.org/10.3399/BJGP17X690821>
- Siegenfeld, A. F., & Bar-Yam, Y. (2020). An Introduction to Complex Systems Science and Its Applications. *Complexity*, 2020. <https://doi.org/10.1155/2020/6105872>
- Sivertsen, D. M., Becker, U., Andersen, O., & Kirk, J. W. (2021). An Ethnographic study of unhealthy alcohol use in a Danish Emergency Department. *Addiction Science and Clinical Practice*, 16(1), 1–11. <https://doi.org/10.1186/S13722-021-00269-Z/TABLES/2>
- Smith, P. B. (2016). Acquiescent Response Bias as an Aspect of Cultural Communication Style. <http://Dx.Doi.Org/10.1177/0022022103260380>, 35(1), 50–61. <https://doi.org/10.1177/0022022103260380>
- Smith, S. L., Franke, M. F., Rusangwa, C., Mukasakindi, H., Nyirandagijimana, B., Bienvenu, R., Uwimana, E., Uwamaliya, C., Ndikubwimana, J. S., Dorcas, S., Mpunga, T., Misago, C. N., Iyamuremye, J. D., Dusabeyezu, J. d'Arc, Mohand, A. A., Atwood, S., Osrow, R. A., Aldis, R., Daimyo, S., ... Raviola, G. J. (2020). Outcomes of a primary care mental health implementation program in rural Rwanda: A quasi-experimental implementation-effectiveness study. *PLOS ONE*, 15(2), e0228854. <https://doi.org/10.1371/journal.pone.0228854>

- Solovei, A., Mercken, L., Jané -Llopis, E., Bustamante, I. S., Evers, S., Gual, A., Medina, P., Mejía-Trujillo, J., Natera-Rey, G., O'donnell, A., Pé Rez-Gó Mez, A., Piazza, M., De Vries, H., & Anderson, P. (2021). Development of community strategies supporting brief alcohol advice in three Latin American countries: a protocol. *Health Promotion International*, 2021, 1–11. <https://doi.org/10.1093/HEAPRO/DAAB192>
- Spagnolo, J., Champagne, F., Leduc, N., Rivard, M., Melki, W., Piat, M., Laporta, M., Guesmi, I., Bram, N., & Charfi, F. (2020). Building capacity in mental health care in low- and middle-income countries by training primary care physicians using the mhGAP: A randomized controlled trial. *Health Policy and Planning*, 35(2), 186–198. <https://doi.org/10.1093/heapol/czz138>
- Sripad, P., Casseus, A., Kennedy, S., Isaac, B., Vissieres, K., Warren, C. E., & Ternier, R. (2021). “Eternally restarting” or “a branch line of continuity”? Exploring consequences of external shocks on community health systems in Haiti. *Journal of Global Health*, 11, 1–11. <https://doi.org/10.7189/JOGH.11.07004>
- Staton, C. A., Vissoci, J. R. N., El-Gabri, D., Adewumi, K., Concepcion, T., Elliott, S. A., Evans, D. R., Galson, S. W., Pate, C. T., Reynolds, L. M., Sanchez, N. A., Sutton, A. E., Yuan, C., Pauley, A., Andrade, L., Von Isenberg, M., Ye, J. J., & Gerardo, C. J. (2022). Patient-level interventions to reduce alcohol-related harms in low- and middle-income countries: A systematic review and meta-summary. *PLOS Medicine*, 19(4), e1003961. <https://doi.org/10.1371/JOURNAL.PMED.1003961>
- Steckler, A., & Linnan, L. (Eds.). (2002). *Process evaluation for public health interventions and research*. Jossey-Bass/Wiley.
- Stokholm Bækgaard, R., Gjørevold Damhaugh, E., Mrema, D., Rasch, V., Khan, K., & Linde, D. S. (2021). Training of healthcare providers and use of long-acting reversible contraception in low- and middle-income countries: A systematic review. *Acta Obstetrica et Gynecologica Scandinavica*, 100(4), 619–628. <https://doi.org/10.1111/aogs.14127>
- Stoltenberg, M., Spence, D., Daubman, B., Greaves, N., Edwards, R., Bromfield, B., Perez-Cruz, P. E., Krakauer, E. L., Argentieri, M. A., & Shields, A. E. (2020). The central role of provider training in implementing resource-stratified guidelines for palliative care in low-income and middle-income countries: Lessons from the Jamaica Cancer Care and Research Institute in the Caribbean and Universidad Católica in La. *Cancer*, 126(S10), 2448–2457. <https://doi.org/10.1002/cncr.32857>
- Sullivan, L. E., Tetrault, J. M., Braithwaite, R. S., Turner, B. J., & Fiellin, D. A. (2011). A meta-analysis of the efficacy of nonphysician brief interventions for unhealthy alcohol use: Implications for the patient-centered medical home. *American Journal on Addictions*, 20(4), 343–356. <https://doi.org/10.1111/j.1521-0391.2011.00143.x>
- Suriyawongpaisal, P., Srithamrongsawadi, S., Sornsrivichai, V., & Thongtan, T. (2020). Evaluation of Health Professional Training on a Large- Scale Implementation of Chronic Care Model in Primary Care Settings of a Middle-Income Country. *International Journal of Clinical Skills*, 14(2), 332–342.
- Testa, M., Quigley, B. M., & Das Eiden, R. (2003). The effects of prenatal alcohol exposure on infant mental development: A meta-analytical review. In *Alcohol and Alcoholism* (Vol. 38, Issue 4, pp. 295–304). Alcohol Alcohol. <https://doi.org/10.1093/alcalc/agg087>
- The Lancet Global Health. (2021). Global health 2021: who tells the story? *The Lancet Global Health*, 9(2), e99. [https://doi.org/10.1016/S2214-109X\(21\)00004-8](https://doi.org/10.1016/S2214-109X(21)00004-8)
- Theobald, S., Brandes, N., Gyapong, M., El-Saharty, S., Proctor, E., Diaz, T., Wanji, S., Elloker, S., Raven, J., Elsey, H., Bharal, S., Pelletier, D., & Peters, D. H. (2018). Implementation research: new imperatives and opportunities in global health. *The Lancet*, 392, 2214–2228. [https://doi.org/10.1016/S0140-6736\(18\)32205-0](https://doi.org/10.1016/S0140-6736(18)32205-0)

- Toyama, M., Castillo, H., Galea, J. T., Brandt, L. R., Mendoza, M., Herrera, V., Mitrani, M., Cutipé, Y., Cavero, V., Diez-Canseco, F., & Miranda, J. J. (2017). Peruvian Mental Health Reform: A Framework for Scaling-up Mental Health Services. *International Journal of Health Policy and Management*, 6(9), 501. <https://doi.org/10.15171/IJHPM.2017.07>
- Tuangratananon, T., Julchoo, S., Phaiyarom, M., Panichkriangkrai, W., Pudpong, N., Patcharanarumol, W., & Tangcharoensathien, V. (2021). Healthcare providers' perspectives on integrating NCDs into primary healthcare in Thailand: a mixed method study. *Health Research Policy and Systems*, 19(1), 1–15. <https://doi.org/10.1186/S12961-021-00791-1/FIGURES/4>
- Uribe-Mallarino, C. (2022). Collaborating as peers or targeted by science diplomacy? The participation of Latin American researchers in the European Framework Programme for Research and Innovation. *Tapuya: Latin American Science, Technology and Society*, 5(1). <https://doi.org/10.1080/25729861.2021.2003282>
- Vendetti, J., Gmyrek, A., Damon, D., Singh, M., McRee, B., & Del Boca, F. (2017). Screening, brief intervention and referral to treatment (SBIRT): implementation barriers, facilitators and model migration. *Addiction*, 112, 23–33. <https://doi.org/10.1111/add.13652>
- Walls, H., Cook, S., Matzopoulos, R., & London, L. (2020). Advancing alcohol research in low-income and middle-income countries: a global alcohol environment framework Analysis. *BMJ Global Health*, 5, 1958. <https://doi.org/10.1136/bmjgh-2019-001958>
- Wamsley, M., Satterfield, J. M., Curtis, A., Lundgren, L., & Satre, D. D. (2018). Alcohol and Drug Screening, Brief Intervention, and Referral to Treatment (SBIRT) Training and Implementation: Perspectives from 4 Health Professions. *Journal of Addiction Medicine*, 12(4), 262–272. <https://doi.org/10.1097/ADM.0000000000000410>
- Willging, C. E., Jaramillo, E. T., Haozous, E., Sommerfeld, D. H., & Verney, S. P. (2021). Macro- and meso-level contextual influences on health care inequities among American Indian elders. *BMC Public Health*, 21(1), 1–14. <https://doi.org/10.1186/S12889-021-10616-Z/TABLES/2>
- Williams, E. C., Johnson, M. L., Lapham, G. T., Caldeiro, R. M., Chew, L., Fletcher, G. S., McCormick, K. A., Weppner, W. G., & Bradley, K. A. (2011). Strategies to Implement Alcohol Screening and Brief Intervention in Primary Care Settings: A Structured Literature Review. *Psychology of Addictive Behaviors*, 25(2), 206–214. <https://doi.org/10.1037/a0022102>
- World Health Organization. (n.d.). *Global Information System on Alcohol and Health (GISAH)*. <http://apps.who.int/gho/data/node.gisah.A1191?lang=en&showonly=GISAH>
- World Health Organization. (2008). *Scaling up care for mental, neurological, and substance use disorders*. <https://www.who.int/publications/i/item/9789241596206>
- World Health Organization. (2013). *Global Action Plan for the prevention and control of non-communicable diseases 2013-2020*. <https://apps.who.int/iris/bitstream/handle/10665/94384?sequence=1>
- World Health Organization. (2016). *A guide to implementation research in the prevention and control of noncommunicable diseases*. <https://doi.org/10.1016/B978-012361776-7/50007-3>
- World Health Organization. (2018a). *Global status report on alcohol and health 2018*. World Health Organization. <https://doi.org/10.1037/cou0000248>
- World Health Organization. (2018b). *WHO launches SAFER alcohol control initiative to prevent and reduce alcohol-related death and disability*. [https://www.who.int/substance\\_abuse/safer/launch/en/](https://www.who.int/substance_abuse/safer/launch/en/)
- World Health Organization, & ExpandNet. (2010). *Nine steps for developing a scaling-up strategy*.
- World Health Organization Regional Office for Europe. (2019). *Status report on alcohol consumption, harm and policy responses in 30 European countries 2019*.
- Yapa, H. M., & Bärnighausen, T. (2018). *Implementation science in resource-poor countries and communities*. 1, 1–13.

- Yennurajalingam, S., Parsons, H. A., Duarte, E. R., Palma, A., Bunge, S., Lynn Palmer, J., Delgado-Guay, M. O., Allo, J., & Bruera, E. (2013). Decisional Control Preferences of Hispanic Patients With Advanced Cancer From the United States and Latin America. *Journal of Pain and Symptom Management*, 46(3), 376–385. <https://doi.org/10.1016/J.JPAINSYMMAN.2012.08.015>
- Ysa, T., Colom, J., Albareda, A., Ramon, A., Carrión, M., & Segura, L. (2014). *Governance of addictions: European public policies*. OUP Oxford.
- Zhang, C., & Monteiro, M. (2013). Tactics and practices of the alcohol industry in Latin America: What can policy makers do? *International Journal of Alcohol and Drug Research*, 2(2), 75–81. <https://doi.org/10.7895/IJADR.V2I2.95>
- Zwarenstein, M., Reeves, S., & Perrier, L. (2005). Effectiveness of pre-licensure interprofessional education and post-licensure collaborative interventions. *Journal of Interprofessional Care*, 19(SUPPL. 1), 148–165. <https://doi.org/10.1080/13561820500082800>

## SUMMARY

In Latin America and the Caribbean region, alcohol use is one of the largest risk factors for ill health. Alcohol consumption has been shown to have a detrimental effect on a range of health-related outcomes, and is projected to increase further in middle-income countries in the coming decades. One of the approaches to reduce alcohol consumption is scaling up alcohol screening and brief interventions in primary care. SCALA (Scaling up risky alcohol use prevention and management and dealing with comorbid depression in primary health care, [www.scalaproject.eu](http://www.scalaproject.eu)) was a Horizon 2020-funded quasi-experimental implementation study comparing different implementation strategies aimed at increasing alcohol screening and brief interventions among primary care providers from three Latin American countries: Colombia, Mexico, and Peru. This thesis is based on data from the process evaluation conducted within the SCALA study, guided by the UK Medical Research Council's process evaluation framework. The research in this thesis evaluated stakeholders' perceptions of the appropriateness of the intervention and key barriers, presented the development of a process evaluation plan and identified factors influencing the implementation of alcohol screening in primary care practice in Colombia, Mexico, and Peru by integrating the process evaluation findings with the outcome. **Chapter 1** elaborates on the rationale behind the research and introduces the project and the key research questions.

In the *first part* of the thesis, the work done before the start of the SCALA study implementation period is presented: the assessment of key stakeholder perceptions before the start of the project, as well as the process evaluation protocol developed in parallel. **Chapter 2** describes the results of a survey disseminated among 55 key stakeholders with experience in alcohol screening and/or primary care setting (both health professionals and other roles, e.g. regional health administrators and national experts). The key aim of the survey was to assess perceptions of the appropriateness of alcohol screening and brief advice and the perceived barriers to its implementation in primary healthcare settings. The results indicated that alcohol screening and brief advice was seen as an appropriate approach to reduce heavy alcohol use in primary health care and a range of providers were considered suitable for its delivery, such as general practitioners, nurses, psychologists and social workers. The perception of stakeholders from the three countries differed on only two of the twenty-one barriers: clarity of guidelines on screening and brief advice (in Peru less clear than in Mexico), and lack of screening instruments (in Peru lacking more than in Colombia and Mexico). The other results were generally congruent between the three countries, with contextual factors such as patients' normalised perception of their heavy drinking, lack of ongoing support for providers, difficulty in accessing referral services, and lenient alcohol control laws being the highest rated barriers. Intervention-related factors such as lack of feasibility or cultural fit were not perceived as major barriers. Barriers related to health professionals' characteristics were neither among the highest nor the lowest rated barriers, this assessment differed by the professional role of the responder. Factors such as lack of skills, lack of responsibility

and beliefs about the intervention not helping the patients were considered much less of a barrier by the general practitioners compared to psychologists or other occupations.

In **Chapter 3**, the aims and the design of the SCALA process evaluation are presented. Given the complexity of both the intervention and the multi-country implementation context, a mixed-methods process evaluation plan was developed based on the UK Medical Research Council guidance to aid the interpretation of results, with the main aims of identifying a) how were different components of the SCALA package implemented; b) the mechanisms of the impact that influenced the outcome c) characteristics of the context that influenced implementation and outcomes and d) common drivers of successful outcome across the three countries. The mixed-methods evaluation was designed to use a range of data collection methods: questionnaires, interviews, observations, logbooks and document analysis over the 18-month implementation period.

In the *second part* of the thesis, the findings of the evaluation of the SCALA study are presented. The SCALA study (including process evaluation) was initially planned to run for the 18-month-long implementation period. The start of the COVID-19 pandemic in March 2020 (which was the 6<sup>th</sup>-7<sup>th</sup> month of the implementation, depending on the centre) led to uncertainty in the ability to continue with the study, as the three countries were hit hard by the pandemic and the healthcare priorities (including in the primary care) were redirected towards dealing with the pandemic. The SCALA consortium prepared a 5-month outcome paper with the available data, looking at the effect of the implementation strategies during the first five months of the implementation period. Chapters 4 and 5 are thus accompanying this outcome paper and take into consideration the interim outcomes in terms of provider screening. Chapter 6 includes data from the entire implementation period, as the study was able to restart later in 2020/2021, and describes the impact of COVID-19 on the study.

The interim 5-month outcome results from the SCALA study, looking at the impact of training and community support on alcohol screening, demonstrated that training primary health care providers was an effective implementation strategy to increase alcohol screening in Colombia, Mexico and Peru, but did not show evidence of superior performance for the standard compared to the shorter training arm. **Chapter 4** examined the relationship of provider demographics – age, gender, occupation, and the training-related variables (dose, arm, participant response) with outcome data on whether the providers did any screening in the 5-month period. Training reach was high, with 352 providers (72.3% of all eligible) participating in one or more training or booster sessions. On average across arms, providers in Colombia spent 2.7 hours in training, in Mexico 2.2 hours and in Peru 3.1 hours. The country differences in the offered session length reflected adaptation to previous topic knowledge and experience of the providers. Among the participating providers, we compared the providers screening at least once during the implementation period (“screeners”, N=173, 49.1% of the sample) with providers not doing any alcohol screening (“non-screeners”, N=179, 50.9% of the sample). The



screeners spent more time in training compared to non-screeners, both in terms of hours and sessions, but the providers receiving the standard training were not more likely to screen than providers in the short training arms. Although the participants were satisfied with the training sessions, satisfaction with training and perceived utility for practice did not differ between screeners and non-screeners (except for the overall satisfaction with the training in Peru). Profession, but not age or gender, was associated with screening: in Colombia and Mexico, both doctors and psychologists were more likely to screen (although the latter represented only a small proportion of the sample) and in Peru, only psychologists.

**Chapter 5** investigated the motivational factors (role security, therapeutic commitment, self-efficacy) and organizational context (leadership, work culture, resources, monitoring, community engagement) at baseline as the factors potentially associated with the proportion of adult patients screened during the 5-month implementation period. Data from the questionnaires completed by 386 of the participating providers at the start of the study was integrated with the data on their screening practice, and interactions by country and by the intervention arm were considered. The analysis found an inverse relationship of role security with the proportion of screened patients. Self-efficacy was associated with an increase in the proportion of screened patients, but only amongst Mexican providers. Support from leadership (formal leader in the organization) was the only significant organizational context factor, but only in non-control arms. Other factors were not found to be significantly related. This study also found that there were significant differences between countries on average scores for all the predictors, suggesting contextual differences: the Mexican providers had the highest role security, self-efficacy, leadership support, resources, monitoring and community engagement scores, and Peruvian providers had the highest means on the therapeutic commitment and work culture scales.

**Chapter 6** analysed the providers' screening practice throughout the whole implementation period and aimed to more systematically appraise the country and policy context in the three countries, and consider to what extent those factors can explain the differences in the country outcomes. The results revealed that the comparatively overall high number of patients screened in Colombia and Mexico can be partially explained by the prioritisation of primary care and consideration of alcohol as a public health issue. The comparatively higher number of screening providers and baseline screening in Mexico could be explained by the existing official normative of having to include information about alcohol use in the patient history. The comparatively overall lower number of screenings and screening providers in Peru could be explained by the political instability of the regional health authorities, lack of focus on strengthening primary care, alcohol being seen as an addiction rather than a public health issue, and COVID-19 impact on healthcare. Time-bound factors affecting the outcome were national and regional governmental elections leading to the project champion having to depart from her influential position, as well as the expiration of many providers' contracts at the

end of each year in Colombia, and the introduction of a new health insurance scheme in Mexico. External events such as the COVID-19 pandemic (in all three countries), a measles outbreak in Mexico and anti-governmental protests in Colombia were also reflected in the decreased number of screenings. Overall, policy factors such as policy emphasis on primary care, framing alcohol use as a public health issue and existing screening practice were facilitating the implementation of alcohol screening on a larger scale. In case of this study, political factors (leadership changes due to elections or political instability) and external shocks (including the COVID-19 pandemic) impeded alcohol screening implementation.

**Chapter 7** brings all the results together and situates them in relation to each other and other literature. In summary, the key results show that the factors related to training (dose received), individual (professional role, self-efficacy), organizational level (leadership support), and wider environment (existing practice, alcohol and primary care policy priorities) influenced the screening practice of the professionals. The role-play-oriented training for the providers was a necessary first step to provide them with the skills needed to initiate conversations about alcohol in primary care. Still, in practice, only half of the providers screened any patient, and a small proportion of all providers screened most of the patients. The three countries differed how the constellations of the identified factors related to the provider screening behaviour. Overall, however, the policy or organizational-level factors seemed to influence the ultimate patient coverage to a larger extent than the individual motivational factors. Thus, in order to scale up alcohol screening and increase patient coverage, future efforts should combine skills-based training, tailored to the local setting and focusing on the individual capacity building, with action focused on community, organizational and policy levels.

## RESUMEN

En la región de América Latina y el Caribe, el consumo de alcohol se ha convertido en uno de los mayores factores de riesgo para la mala salud. Se ha demostrado, en una amplia gama de resultados, que el consumo de alcohol tiene un efecto perjudicial en lo que a salud respecta y se prevé que aumente aún más en los países de ingresos medios en las próximas décadas. Uno de los enfoques para reducir el consumo de alcohol consiste en aumentar la escala de las pruebas de consumo y llevar a cabo breves intervenciones en el área de atención primaria. SCALA (*Scaling up risky alcohol use prevention and management and dealing with co-morbid depression in primary health care*, [www.scalaproject.eu](http://www.scalaproject.eu)) fue un estudio de implementación cuasi-experimental financiado por Horizonte 2020 que comparó diferentes estrategias de implementación dirigidas a aumentar el tamizaje de alcohol y las intervenciones breves entre los proveedores de atención primaria de tres países latinoamericanos: Colombia, México y Perú. Esta tesis se basa en los datos de la evaluación de procesos realizada dentro del estudio SCALA, guiada por el marco de evaluación de procesos del Consejo de Investigación Médica del Reino Unido. La investigación de esta tesis evaluó las percepciones de las partes interesadas sobre la idoneidad de la intervención y las barreras clave, presentó el desarrollo de un plan de evaluación de procesos e identificó los factores que influyen en la implementación del tamizaje de alcohol en la práctica de atención primaria en Colombia, México y Perú, integrando los hallazgos de la evaluación de procesos con los resultados. En el capítulo 1 se expone la justificación del estudio y se presentan el proyecto y las preguntas clave de la investigación.

En la primera parte de la tesis, se presenta el trabajo realizado antes del inicio del periodo de ejecución del estudio SCALA: la evaluación de las percepciones de los actores clave antes del inicio del proyecto, así como el protocolo de evaluación del proceso desarrollado en paralelo. En el capítulo 2 se describen los resultados de una encuesta difundida entre 55 actores clave con experiencia en el tamizaje del alcohol y/o en el ámbito de la atención primaria (tanto profesionales sanitarios como otras funciones, por ejemplo, administradores regionales de salud y expertos nacionales). El objetivo principal de la encuesta era evaluar las percepciones sobre la idoneidad del tamizaje y intervención breve, así como los obstáculos percibidos para su aplicación en los centros de atención primaria. Los resultados indicaron que el tamizaje y intervención breve se consideraban un enfoque adecuado para reducir el consumo excesivo de alcohol en la atención primaria de salud y que una serie de proveedores, como médicos generales, enfermeras, psicólogos y trabajadores sociales, se consideraban adecuados para su aplicación. La percepción de las partes interesadas de los tres países sólo difería en dos de los veintinueve obstáculos: la claridad de las directrices sobre el tamizaje y intervención breve (en Perú menos claras que en México) y la falta de instrumentos de tamizaje (en Perú faltaban más que en Colombia y México).

Los demás resultados fueron en general congruentes entre los tres países, siendo los factores contextuales como la percepción normalizada de los pacientes de su consumo

excesivo de alcohol, la falta de apoyo continuo a los proveedores, la dificultad para acceder a los servicios de derivación y las leyes poco estrictas de control del alcohol los obstáculos mejor valorados. Los factores relacionados con la intervención, como la falta de viabilidad o de adecuación cultural, no se percibieron como barreras importantes. Las barreras relacionadas con las características de los profesionales sanitarios no se encontraban ni entre las barreras mejor valoradas ni entre las peor valoradas; esta valoración difería según el papel profesional del encuestado. Factores como la falta de habilidades, la falta de responsabilidad y la creencia de que la intervención no ayudaría a los pacientes fueron considerados barreras mucho menos importantes por los médicos generalistas que por los psicólogos u otras profesiones.

En el capítulo 3 se presentan los objetivos y el diseño de la evaluación del proceso SCALA. Dada la complejidad tanto de la intervención como del contexto de implementación multinacional, se desarrolló un plan de evaluación del proceso con métodos mixtos basado en las directrices del Consejo de Investigación Médica del Reino Unido para facilitar la interpretación de los resultados, con los objetivos principales de identificar a) cómo se implementaron los diferentes componentes del paquete SCALA; b) los mecanismos del impacto que influyeron en el resultado; c) las características del contexto que influyeron en la implementación y los resultados; y d) los impulsores comunes del éxito de los resultados en los tres países. La evaluación de métodos mixtos se diseñó para utilizar diversos métodos de recopilación de datos: cuestionarios, entrevistas, observaciones, cuadernos de bitácora y análisis de documentos a lo largo de los 18 meses de aplicación.

En la segunda parte de la tesis se presentan las conclusiones de la evaluación del estudio SCALA. Inicialmente se había previsto que el estudio SCALA (incluida la evaluación del proceso) se llevara a cabo durante los 18 meses del periodo de aplicación. El inicio de la pandemia COVID-19 en marzo de 2020 (que fue el 6° - 7° mes de la implementación, dependiendo del foco) provocó incertidumbre en la capacidad de continuar con el estudio, ya que los tres países se vieron duramente afectados por la pandemia y las prioridades sanitarias (incluso en la atención primaria) se reorientaron para hacer frente a la nueva crisis emergente. El consorcio SCALA preparó un documento de resultados de 5 meses con los datos disponibles, en el que se analizaba el efecto de las estrategias de estudio durante los cinco primeros meses del periodo de aplicación. Así pues, los capítulos 4 y 5 acompañan a este documento de resultados y tienen en cuenta las conclusiones provisionales en términos de tamizaje de proveedores. El capítulo 6 incluye datos de todo el periodo de implementación, ya que el estudio pudo reiniciarse más tarde, en 2020/2021, y describe el impacto de COVID-19 en la investigación.

Los resultados provisionales a 5 meses del estudio SCALA, que analizaban el impacto de la formación y el apoyo comunitario en el tamizaje del alcohol, demostraron que la formación de los proveedores de atención primaria era una estrategia de aplicación eficaz para aumentar el tamizaje del alcohol en Colombia, México y Perú, pero no

mostraron pruebas de un rendimiento superior respecto al estándar en comparación con la sección de formación más corta. En el capítulo 4 se examinó la relación entre los datos demográficos de los proveedores (edad, sexo, ocupación) y las variables relacionadas con la formación (dosis, sección, respuesta de los participantes) con los datos de resultados sobre si los proveedores realizaron algún tamizaje en el periodo de 5 meses. El alcance de la formación fue alto, con 352 proveedores (72,3% de todos los elegibles) que participaron en una o más sesiones de formación o de refuerzo. De media, los proveedores de Colombia dedicaron 2,7 horas a la formación, los de México 2,2 horas y los de Perú 3,1 horas. Las diferencias entre países en cuanto a la duración de las sesiones ofrecidas reflejaron la adaptación al conocimiento previo del tema y a la experiencia de los proveedores. Entre los proveedores participantes, se compararon los proveedores que realizaron el tamizaje al menos una vez durante el periodo de aplicación (N=173, 49,1% de la muestra) con los proveedores que no realizaron ningún tamizaje de alcohol (N=179, 50,9% de la muestra). Los que realizaron el tamizaje dedicaron más tiempo a la formación que los que no lo hicieron, tanto en términos de horas como de sesiones, pero los proveedores que recibieron la formación estándar no tuvieron más probabilidades de realizar el tamizaje que los proveedores de los grupos de formación breve. Aunque los participantes se mostraron satisfechos con las sesiones de formación, la satisfacción con la formación y la utilidad percibida para la práctica no difirieron entre tamizajeros y no tamizajeros (excepto en el caso de la satisfacción general con la formación en Perú). La profesión, pero no la edad ni el sexo, se asoció con el tamizaje: en Colombia y México, tanto los médicos como los psicólogos eran más propensos a cribarse (aunque estos últimos representaban sólo una pequeña proporción de la muestra) y en Perú, sólo los psicólogos.

En el capítulo 5 se investigaron los factores motivacionales (seguridad de rol, compromiso terapéutico, autoeficacia) y el contexto organizativo (liderazgo, cultura de trabajo, recursos, supervisión, compromiso con la comunidad) en la línea de base como factores potencialmente asociados con la proporción de pacientes adultos sometidos a tamizaje durante el periodo de aplicación de 5 meses. Los datos de los cuestionarios cumplimentados por 386 de los proveedores participantes al inicio del estudio se integraron con los datos sobre su práctica de tamizaje, y se consideraron las interacciones por país y por intervención. El análisis halló una relación inversa de la seguridad de rol con la proporción de pacientes sometidos a tamizaje. La autoeficacia se asoció con un aumento de la proporción de pacientes examinados, pero sólo entre los proveedores mexicanos. El apoyo del liderazgo (líder formal en la organización) fue el único factor significativo del contexto organizativo, pero sólo en brazos de intervención. Otros factores no resultaron estar significativamente relacionados. Este estudio también halló que había diferencias significativas entre los países en las puntuaciones medias de todos los predictores, lo que sugiere diferencias contextuales: los proveedores mexicanos tenían las puntuaciones más altas en seguridad de rol, autoeficacia, apoyo del liderazgo, recursos, supervisión y compromiso con la comunidad, y los proveedores peruanos tenían las medias más altas en las escalas de compromiso terapéutico y cultura laboral.

En el capítulo 6 se analizó la práctica de detección de los proveedores durante todo el período de aplicación y se pretendió a evaluar de forma más sistemática el contexto nacional y político de los tres países, así como considerar hasta qué punto estos factores pueden explicar las diferencias en los resultados de los países. Los resultados revelaron que el número comparativamente elevado de pacientes sometidos a tamizaje en Colombia y México puede explicarse en parte por la priorización de la atención primaria y la consideración del alcohol como un problema de salud pública. El número comparativamente más alto de proveedores de tamizaje y de tamizaje de referencia en México podría explicarse por la normativa oficial existente de tener que incluir información sobre el consumo de alcohol en la historia clínica del paciente. El número comparativamente menor de pruebas de detección y de proveedores de pruebas de detección en Perú podría explicarse por la inestabilidad política de las autoridades sanitarias regionales, la falta de atención al refuerzo de la atención primaria, la consideración del alcohol como una adicción más que como un problema de salud pública y el impacto de la COVID-19 en la asistencia sanitaria. Los factores temporales que afectaron a los resultados fueron las elecciones gubernamentales nacionales y regionales, que obligaron a la promotora del proyecto a abandonar su influyente cargo, así como el vencimiento de los contratos de muchos proveedores al final de cada año en Colombia y la introducción de un nuevo plan de seguro médico en México. Acontecimientos externos como la pandemia de COVID-19 (en los tres países), un brote de sarampión en México y protestas antigubernamentales en Colombia también se reflejaron en la disminución del número de revisiones. En general, factores políticos como el énfasis de las políticas en la atención primaria, la consideración del consumo de alcohol como un problema de salud pública y las prácticas de tamizaje existentes facilitaron la implantación del tamizaje del alcohol a mayor escala. En el caso de este estudio, los factores políticos (cambios de liderazgo debidos a elecciones o inestabilidad política) y las perturbaciones externas (incluida la pandemia de COVID-19) impidieron la implantación del tamizaje del alcohol.

El capítulo 7 reúne todos los resultados y los sitúa en relación entre sí y con otras publicaciones. En resumen, los resultados clave muestran que los factores relacionados con la formación (dosis recibida), el individuo (rol profesional, autoeficacia), el nivel organizativo (apoyo del liderazgo) y el entorno más amplio (práctica existente, prioridades políticas en materia de alcohol y atención primaria) influyeron en la práctica de tamizaje de los profesionales. La formación de los profesionales mediante juegos de rol fue un primer paso necesario para dotarles de las habilidades necesarias para iniciar conversaciones sobre el alcohol en la atención primaria. Aun así, en la práctica, sólo la mitad de los profesionales realizó pruebas de detección a algún paciente, y una pequeña proporción de todos los profesionales realizó tamizajes en la mayoría de los pacientes. Los tres países diferían en la forma en que la variedad de factores identificados se relacionaban con el comportamiento de tamizaje de los proveedores. En general, sin embargo, los factores políticos u organizativos parecían influir en la cobertura final de los pacientes en mayor medida que los factores motivacionales individuales. Por lo tanto,

para ampliar el tamizaje del alcohol y aumentar la cobertura de pacientes, los esfuerzos futuros deberían combinar la formación basada en habilidades, adaptada al entorno local y centrada en el desarrollo de la capacidad individual, con acciones centradas en los niveles comunitario, organizativo y político.

## POVZETEK

V Latinski Ameriki je uživanje alkohola eden največjih dejavnikov tveganja za nastanek bolezni. Dokazano je, da pitje alkohola škodljivo vpliva na številne z zdravjem povezane posledice, v prihodnjih desetletjih pa naj bi se poraba alkohola v državah s srednjimi dohodki še povečala. Eden od možnih pristopov za zmanjšanje pitja alkohola je zgodnje odkrivanje tveganega pitja v primarnem zdravstvu. V sklopu projekta SCALA (*Scaling up risky alcohol use prevention and management and dealing with comorbid depression in primary health care*, [www.scalaproject.eu](http://www.scalaproject.eu)) je bila izvedena kvazi-eksperimentalna raziskava, financirana preko programa Horizon 2020, v kateri so bile primerjane različne strategije za spodbujanje zgodnjega odkrivanja tveganega pitja alkohola med zdravstvenimi delavci na primarni ravni v treh državah Latinske Amerike: Kolumbiji, Mehiki in Peruju. Pričujoča doktorska disertacija temelji na podatkih iz procesne evalvacije, izvedene v okviru študije SCALA. V prvem poglavju je podrobneje predstavljeno ozadje raziskave ter sam projekt in ključna raziskovalna vprašanja.

V drugem poglavju so opisani rezultati ankete, ki je bila izvedena med 55 ključnimi deležniki z izkušnjami na področju zgodnjega odkrivanja tveganega pitja alkohola ali na področju primarnega zdravstvenega varstva. Ključni cilj ankete je bil oceniti zaznavo primernosti intervencije ter zaznavo ovir za njeno izvajanje v primarnem zdravstvu. Rezultati so pokazali, da ključni deležniki vidijo zgodnje odkrivanje tveganega pitja alkohola in kratko svetovanje kot ustrezen pristop za zmanjševanje prekomerne rabe alkohola v primarnem zdravstvenem varstvu in da so za njuno izvajanje primerni različni tipi izvajalcev - zdravniki, medicinske sestre, psihologi in socialni delavci. Primerjava odgovorov med ključnimi deležniki glede na državo je pokazala razlike le pri dveh od enaindvajsetih potencialnih ovir: glede jasnosti smernic (v Peruju manj jasne kot v Mehiki) in glede pomanjkanja ustreznih instrumentov (v Peruju jih je manj kot v Kolumbiji in Mehiki). Kot največje zaznane ovire so bili ocenjeni kontekstualni dejavniki, kot so družbena normalizacija čezmernega pitja alkohola, pomanjkanje stalne podpore za izvajalce intervencij, težave pri napotitvah na zdravljenje in šibka alkoholna zakonodaja. Dejavniki, povezani z intervencijo, kot sta nizka izvedljivost ali nizka kulturna ustreznost, niso bili zaznani kot glavne ovire. Ovire, povezane z značilnostmi zdravstvenih delavcev, niso bile niti med najvišje niti med najnižje ocenjenimi, ta ocena pa se je razlikovala glede na poklicno ozadje ključnih deležnikov. Dejavnike, kot so pomanjkanje spretnosti, pomanjkanje odgovornosti in prepričanja o tem, da intervencija ne pomaga pacientom, so zdravniki v primerjavi s psihologi ali drugimi poklici ocenili kot manjšo oviro.

V tretjem poglavju so predstavljeni cilji in zasnova procesne evalvacije znotraj študije SCALA. Zaradi kompleksnosti intervencije in njene izvedbe v večih državah je bil na podlagi smernic Sveta za medicinske raziskave Združenega kraljestva razvit načrt vrednotenja procesa z uporabo mešanih metod. Načrt je bil zasnovan za pomoč pri razlagi rezultatov intervencije, glavni cilji pa so bili ugotoviti: a) kako so se izvajali različni deli intervencije; b) mehanizme učinka, ki so vplivali na rezultate; c) značilnosti



konteksta, ki so vplivale na izvajanje intervencije in njene rezultate, ter d) skupne dejavnike uspešnih rezultatov v vseh treh državah. V 18-mesečnem obdobju izvajanja se je za namene procesne evalvacije uporabilo različne metode zbiranja podatkov: vprašalnike, intervjuje, opazovanja, dnevnike in analizo dokumentov.

V naslednjih poglavjih so predstavljene ključne ugotovitve vrednotenja študije SCALA. Študija SCALA (vključno z vrednotenjem procesa) je bila sprva načrtovana za 18-mesečno obdobje izvajanja. Zaradi začetka pandemije COVID-19 v marcu 2020 pa se je pojavila negotovost glede možnosti nadaljevanja študije, saj je pandemija močno prizadela vse tri sodelujoče države in so bile prednostne naloge zdravstvenega sistema (tudi v primarnem zdravstvu) preusmerjene v spoprijemanje s pandemijo. Konzorcij projekta je v tej fazi na podlagi razpoložljivih podatkov pripravil članek z vmesnimi rezultati, v katerem smo preučili učinek strategij kot so izobraževanje in lokalna podpora v prvih petih mesecih obdobja izvajanja intervencije (članek ni del disertacije). Četrto in peto poglavje tako upoštevata vmesne rezultate intervencije. Šesto poglavje vključuje podatke iz celotnega obdobja izvajanja intervencije, saj se je študija lahko nadaljevala kasneje v letih 2020 in 2021, in opisuje vpliv COVID-19 na izvedbo intervencije.

Vmesni rezultati študije SCALA, ki je preučevala vpliv usposabljanja in podpore skupnosti na pregledovanje za alkohol, so pokazali, da je bilo usposabljanje izvajalcev primarnega zdravstvenega varstva učinkovita strategija izvajanja za povečanje zgodnjega odkrivanja tveganega pitja alkohola v Kolumbiji, Mehiki in Peruju, vendar daljše usposabljanje ni vodilo do večjega dosega pacientov v primerjavi s krajšim. V četrtem poglavju je bila preučena povezanost demografskih značilnosti izvajalcev - starost, spol, poklic - in spremenljivk, povezanih z usposabljanjem (odmerek intervencije, dolžina usposabljanja, odziv udeležencev), s prakso izvajalcev - ali so zdravstveni delavci v 5-mesečnem obdobju izvedli vsaj eno intervencijo zgodnjega odkrivanja tveganega pitja alkohola. Doseg usposabljanja je bil visok, saj se je 352 izvajalcev (72,3 % vseh upravičenih) udeležilo enega ali več usposabljanj. V povprečju so izvajalci v Kolumbiji za usposabljanje porabili 2,7 ure, v Mehiki 2,2 ure in v Peruju 3,1 ure. Razlike med državami v dolžini ponujenih usposabljanj so odražale prilagoditev obstoječemu znanju o temi in izkušnjam izvajalcev. Med sodelujočimi zdravstvenimi delavci smo primerjali tiste, ki so v obdobju izvajanja vsaj enkrat uporabili vprašalnik o pitju alkohola ("izvajalci", N=173, 49,1 % vzorca), z zdravstvenimi delavci, ki le-tega niso uporabili ("neizvajalci", N=179, 50,9 % vzorca). Izvajalci so usposabljanju namenili več časa v primerjavi z ne-izvajalci, vendar pri izvajalcih, ki so bili deležni standardnega usposabljanja, ni bilo večje verjetnosti, da bodo izvedli intervencijo, kot pri izvajalcih v skupinah s kratkim usposabljanjem. Čeprav so bili udeleženci zadovoljni z usposabljanji, se obseg zadovoljstva z usposabljanjem in zaznana uporabnost za prakso nista razlikovala med izvajalci in ne-izvajalci (razen splošnega zadovoljstva z usposabljanjem v Peruju). Poklic, ne pa tudi starost ali spol, je bil povezan z izvajanjem intervencije: v Kolumbiji in Mehiki so jo pogosteje izvajali tako zdravniki kot psihologi (čeprav so slednji predstavljali le majhen delež vzorca), v Peruju pa le psihologi.

V petem poglavju so bili raziskani motivacijski dejavniki (varnost vloge, terapevtska zavezanost, samoučinkovitost) in organizacijsko okolje (vodenje, delovna kultura, viri, spremljanje, vključenost skupnosti) na začetku intervencije kot dejavniki, potencialno povezani z deležem odraslih pacientov, pregledanih v 5-mesečnem obdobju izvajanja. Podatki iz vprašalnikov, ki jih je na začetku študije izpolnilo 386 sodelujočih izvajalcev, so bili združeni s podatki o njihovem izvajanju intervencije v praksi, upoštevane pa so bile tudi interakcije glede na državo in tip intervencije. Analiza je pokazala obratno sorazmerje med varnostjo vloge in deležem pregledanih bolnikov. Samoučinkovitost je bila povezana s povečanjem deleža pregledanih bolnikov, vendar le med mehiškimi izvajalci. Podpora vodstva (formalnega vodje v organizaciji) je bila edini pomemben dejavnik organizacijskega konteksta, vendar le v intervencijskih skupinah. Za druge dejavnike ni bilo ugotovljeno, da bi bili pomembno povezani z deležem pregledanih pacientov. V tej raziskavi je bilo tudi ugotovljeno, da so med državami obstajale pomembne razlike v povprečnih ocenah vseh napovednih spremenljivk, kar kaže na kontekstualne razlike: mehiški izvajalci so imeli najvišje ocene varnosti vlog, samoučinkovitosti, podpore vodstva, virov, spremljanja in vključenosti skupnosti, perujski izvajalci pa so imeli najvišja povprečja na lestvicah terapevtske zavezanosti in delovne kulture.

V šestem poglavju je bila analizirana praksa zdravstvenih delavcev v celotnem obdobju izvajanja projekta, namen poglavja pa je bil bolj sistematično oceniti vpliv nacionalnih in političnih dejavnikov v treh državah ter preučiti, v kolikšni meri lahko le-ti pojasnijo razlike v končnih rezultatih. Rezultati so pokazali, da je mogoče primerjalno visoko skupno število pregledanih bolnikov v Kolumbiji in Mehiki delno pojasniti s prednostno obravnavo primarnega zdravstvenega varstva in obravnavanjem alkohola kot vprašanja javnega zdravja. Primerjalno večje število izvajalcev v Mehiki je mogoče pojasniti z obstoječim uradnim normativom, da je potrebno v anamnezo bolnika vključiti informacije o uživanju alkohola. Primerjalno manjše število presejalnih pregledov in izvajalcev presejalnih pregledov v Peruju je mogoče pojasniti s politično nestabilnostjo regionalnih zdravstvenih organov, pomanjkanjem fokusa na krepitev primarnega zdravstvenega varstva, obravnavanjem rabe alkohola kot vprašanja odvisnosti in ne kot vprašanja javnega zdravja ter vplivom COVID-19 na zdravstveni sistem. Časovno omejeni dejavniki, ki so vplivali na rezultate, so bile nacionalne in regionalne volitve, zaradi katerih je morala vodja projekta zapustiti svoj vplivni položaj, ter potek pogodb številnih izvajalcev ob koncu vsakega leta v Kolumbiji in uvedba novega sistema zdravstvenega zavarovanja v Mehiki. Zunanji dogodki, kot so pandemija COVID-19 (v vseh treh državah), izbruh ošpic v Mehiki in protivladni protesti v Kolumbiji, so se prav tako odrazili v zmanjšanem številu pregledov. Na splošno so politični dejavniki, kot so poudarek na primarnem zdravstvenem varstvu, opredelitev uživanja alkohola kot vprašanja javnega zdravja in obstoječa praksa zgodnjega odkrivanja tveganega pitja alkohola olajšali izvajanje intervencije v večjem obsegu. V naši študiji so kot ovire delovali politični dejavniki (spremembe vodstva zaradi volitev ali politične nestabilnosti) in zunanji šoki (vključno s pandemijo COVID-19).

V sedmem poglavju so predstavljeni in povezani rezultati iz vseh prejšnjih poglavij. Če povzamemo, ključni rezultati kažejo, da so na vedenje zdravstvenih delavcev vplivali dejavniki, povezani z usposabljanjem (količina usposabljanja), posameznikom (poklicna vloga, samoučinkovitost), organizacijo (podpora vodstva) in širšim okoljem (obstoječa praksa, prednostna obravnava alkohola in primarnega zdravstvenega varstva v politikah). Usposabljanje za izvajalce, usmerjeno v igro vlog, je bilo nujen prvi korak za zagotovitev veščin, potrebnih za spodbujanje pogovorov o alkoholu v primarnem zdravstvenem varstvu. Kljub temu je v praksi le polovica izvajalcev izvedla intervencijo, le majhen delež vseh izvajalcev pa je izvedel večino pregledov. Med tremi državami so bile razlike v kombinacijah relevantnih dejavnikov. V splošnem pa se je izkazalo, da so dejavniki na ravni politik ali organizacije v večji meri vplivali na končno število doseženih bolnikov kot pa motivacijski dejavniki na ravni izvajalcev (zdravstvenih delavcev). Zato je potrebno za širitev intervencije zgodnjega odkrivanja tveganega pitja alkohola in večji doseg bolnikov v prihodnje združiti usposabljanje na podlagi treninga veščin, prilagojeno lokalnemu okolju in osredotočeno na krepitev zmogljivosti posameznika, z ukrepi, usmerjenimi na raven skupnosti, organizacije in politike.

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## PUBLICATION LIST

### In this thesis:

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**Kokole, D.**, Jané-Llopis, E., Mercken, L., Piazza, M., Bustamante, I., Natera Rey, G., Medina, P., Pérez-Gómez, A., Mejía-Trujillo, J., & O'Donnell, A. (2021). Factors associated with primary health care providers' alcohol screening behavior in Colombia, Mexico and Peru. *Substance Abuse*, 42(4), 1007–1015.

**Kokole, D.**, Jané-Llopis, E., Natera, G., Bautista, N., Medina, P., Mejía-Trujillo, J., Mora, K., Restrepo, N., Bustamante, I., Piazza, M., O'Donnell, A., Solovei, A., Mercken, L., Schmidt, C., Lopez-Pelayo, H., Matrai, S., Braddick, F., Gual, T., Rehm, J., Anderson, P. & de Vries, H. (2022). Training primary health care providers in Colombia, Mexico and Peru to increase alcohol screening: mixed methods process evaluation of implementation strategy. *Implementation Research and Practice*, 3.

**Kokole, D.**, Mercken, L., Jané-Llopis, E., Natera Rey, G., Arroyo, M., Medina, P., Pérez-Gómez, A., Mejía-Trujillo, J., Piazza, M., Bustamante, I. v., O'Donnell, A., Kaner, E., Gual, A., Lopez-Pelayo, H., Schulte, B., Manthey, J., Rehm, J., Anderson, P., & de Vries, H. (2021). Perceived appropriateness of alcohol screening and brief advice programmes in Colombia, Mexico and Peru and barriers to their implementation in primary health care—a cross-sectional survey. *Primary Health Care Research and Development*, 22(e4), 1–13.

**Kokole, D.**, Mercken, L., Anderson, P., Mejía-Trujillo, J., Perez, A., Bustamante, I., Piazza, M., Natera Rey, G., Arroyo, M., Perez Leon, A., Bautista Aguilar, N., Medina Aguilar, P.S., Schulte, B., O'Donnell, A., de Vries, H. & Jané-Llopis, E. Country and policy factors influencing the implementation of primary-care based alcohol screening: a comparison of Colombia, Mexico and Peru. *Global Public Health*.

### Other publications:

Anderson, P., & **Kokole, D.** (2022a). Effects of Substitution of Higher-Alcohol Products with Lower-Alcohol Products on Population-Level Alcohol Purchases: ARIMA Analyses of Spanish Household Data. *Nutrients*, 14(19), 4209.

Anderson, P., & **Kokole, D.** (2022b). The Impact of Lower-Strength Alcohol Products on Alcohol Purchases by Spanish Households. *Nutrients*, 14(16), 3412.

Anderson, P., **Kokole, D.**, & Jané Llopis, E. (2022). Impact of minimum unit pricing on shifting purchases from higher to lower strength beers in Scotland: Controlled interrupted time series analyses, 2015–2020. *Drug and Alcohol Review*, 41(3), 646–656.

Anderson, P., **Kokole, D.**, Jané Llopis, E., Burton, R., & Lachenmeier, D. W. (2022). Lower strength alcohol products—a realist review-based road map for European policy making. *Nutrients*, 14(18), 3779.

Anderson, P., **Kokole, D.**, & Llopis, E. J. (2021). Production, consumption, and potential public health impact of low-and no-alcohol products: results of a scoping review. *Nutrients*, 13(9), 3153.

Anderson, P., Manthey, J., Jané-Llopis, E., Natera Rey, G., Bustamante, I., Piazza, M., Aguilar, P. S. M., Mejía-Trujillo, J., Pérez-Gómez, A., Rowlands, G., Lopez-Pelayo, H., Mercken, L., **Kokole, D.**, O'Donnell, A., Solovei, A., Kaner, E., Schulte, B., Vries, H. de, Schmidt, C., Gual, A. & Rehm, J. (2021). Impact of training and municipal support on primary health care-based measurement of alcohol consumption in three Latin American countries: five-month outcome results of the quasi-experimental randomized SCALA trial. *Journal of General Internal Medicine*, 36, 2663–2671.

Anderson, P., O'Donnell, A., **Kokole, D.**, Jané Llopis, E., & Kaner, E. (2021). Is buying and drinking zero and low alcohol beer a higher socio-economic phenomenon? Analysis of British Survey Data, 2015–2018 and Household Purchase Data 2015–2020. *International Journal of Environmental Research and Public Health*, 18(19), 10347.

Jané-Llopis, E., Anderson, P., Piazza, M., O'Donnell, A., Gual, A., Schulte, B., Gómez, A. P., de Vries, H., Rey, G. N., **Kokole, D.**, Bustamante, I., Braddick, F., Meija-Trujillo, J., Solovei, A., Perez De Leon, A., Kaner, E., Matrai, S., Manthey, J., Mercken, L., Lopez-Pelayo, H., Rowlands, G., Schmidt, C. & Rehm, J. (2020). Implementing primary healthcare-based measurement, advice and treatment for heavy drinking and comorbid depression at the municipal level in three Latin American countries: final protocol for a quasiexperimental study (SCALA study). *BMJ Open*, 10(7), e038226.

Jané-Llopis, E., **Kokole, D.**, Neufeld, M., Hasan, O. S. M., & Rehm, J. (2020). *What is the current alcohol labelling practice in the WHO European Region and what are barriers and facilitators to development and implementation of alcohol labelling policy?* World Health Organization. Regional Office for Europe.

Kamin, T., & **Kokole, D.** (2016). Midstream social marketing intervention to influence retailers' compliance with the minimum legal drinking age law. *Journal of Social Marketing*, 6(2).

**Kokole, D.**, Anderson, P., & Jané-Llopis, E. (2021). Nature and potential impact of alcohol health warning labels: a scoping review. *Nutrients*, 13(9), 3065.

**Kokole, D.**, Jané Llopis, E., & Anderson, P. (2022). Non-alcoholic beer in the European Union and UK: Availability and apparent consumption. *Drug and Alcohol Review*, *41*(3), 550–560.

O'Donnell, A., Anderson, P., Schmidt, C., Braddick, F., Lopez-Pelayo, H., Mejía-Trujillo, J., Natera, G., Arroyo, M., Bautista, N., Piazza, M., Bustamante, I., **Kokole, D.**, Jackson, K., Jane-Llopis, E., Gual, A. & Schulte, B. (2022). Tailoring an evidence-based clinical intervention and training package for the treatment and prevention of comorbid heavy drinking and depression in middle-income country settings: the development of the SCALA toolkit in Latin America. *Global Health Action*, *15*(1), 2080344.

O'Donnell, A., Schulte, B., Manthey, J., Schmidt, C. S., Piazza, M., Chavez, I. B., Natera, G., Aguilar, N. B., Hernández, G. Y. S., Mejía-Trujillo, J., Perez-Gomez, A., Gual, A., de Vries, H., Solovei, A., **Kokole, D.**, Kaner, E., Killian, C., Rehm, J., Anderson, P. & Jane-Llopis, E. (2021). Primary care-based screening and management of depression amongst heavy drinking patients: Interim secondary outcomes of a three-country quasi-experimental study in Latin America. *PloS One*, *16*(8), e0255594.

Solovei, A., Jané-Llopis, E., Mercken, L., Bustamante, I., **Kokole, D.**, Mejía-Trujillo, J., Medina Aguilar, P. S., Natera Rey, G., O'Donnell, A., & Piazza, M. (2022). Effect of Community Support on the Implementation of Primary Health Care-Based Measurement of Alcohol Consumption. *Prevention Science*, *23*(2), 224–236.

Stewart, K. F. J., **Kokole, D.**, Wesselius, A., Schols, A. M. W. J., Zeegers, M. P., de Vries, H., & van Osch, L. A. D. M. (2018). Factors associated with acceptability, consideration and intention of uptake of direct-to-consumer genetic testing: a survey study. *Public Health Genomics*, *21*(1–2), 45–52.



## CURRICULUM VITAE

Daša Kokole was born on 5<sup>th</sup> March 1989 in Koper, Slovenia. In 2007, she received her International Baccalaureate diploma at Gimnazija Bežigrad. She continued her education at Faculty of Arts at University of Ljubljana (2007-2013), where she obtained a graduate degree in psychology. After completing her studies, she spent three years working in non-governmental sector, focusing on health promotion research and intervention implementation involving young people on national and European level. In 2017, she obtained Master of Science in Health Education and Promotion at Maastricht University. In 2018, she commenced her PhD trajectory at the Department of Health Promotion, investigating factors influencing implementation of alcohol screening and brief intervention among primary care providers in Latin America. Within the scope of the SCALA project, she was responsible for design and implementation of the process evaluation working package and using the acquired data to help explain the study outcomes. During her trajectory, she was also involved in producing reports for the World Health Organization and European Commission, synthesizing evidence on topics of alcohol labelling and the no- and low- alcohol products.



Next to research, Daša was also a tutor and trainer in MSc Health Education and Promotion, BSc Health Sciences and BSc European Public Health, obtaining her University Teaching Qualification in 2022; as well as competence coach in the EDLAB's PREMIUM masters Honours programme. She also remained active on the international level, attending the first Implementation Science School organized by the Global Alliance for Noncommunicable Diseases, and was involved in the Young Forum Gastein initiative.

In beginning of 2023, Daša joined WHO Regional Office for Europe as a consultant in the Alcohol, Illicit Drugs & Prison Health Unit. In her work, she combines her expertise in alcohol policies with her implementation research background to aid in translating evidence into practice on the EU level, focusing on alcohol labelling, screening and brief interventions and cancer awareness.

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